

KEY SOLUTIONS

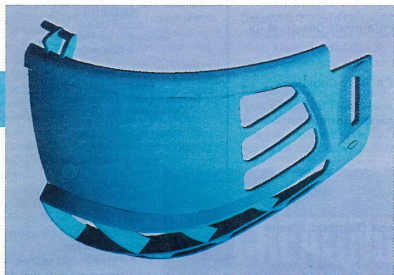
THE PROFESSIONAL
JOURNAL FOR
CADKEY & DATACAD
USERS

VOLUME 5 NUMBER 2

MARCH 1996

CADKEY ON ICE

It's Smooth Skating For Helmet Designers

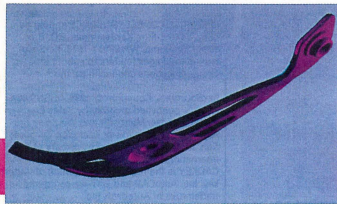


Half model of full visor showing lens, side vents and mouth guard

The visor that fits on a hockey helmet looks deceptively simple, but it's just not so. When GID Design, a Canadian product design and development firm located in Sainte-Foy Quebec, was contracted by Leader Industries of Boucherville, Quebec, (a leader in optical products) to design a new, radically improved hockey visor, they immediately discovered that the design parameters for

the project were extensive.

By looking at the deficiencies of existing products and brainstorming the "ideal" visor, they determined that they needed to incorporate many elements and features, including a spherical lens geometry to fit close to the face, improved ventilation for breathing, heat dissipation and less fogging, an ability to fit a large proportion of the helmets on the market,



adjustability to fit adult through youth sizes, a built-in articulated jaw and chin cup for comfort and speech, a smooth-flowing shape, and, last but not least, meet the new CSA (Canadian Standards Association) and ASTM (American Standards Testing/Measurements) specifications which state that visors must be able to withstand 63 mph impacts from a hockey puck.

Undaunted, they took on the challenge. GID was involved in the year-and-a-half long project, from design conceptualization to manufacturing of the helmet visor, which comes in a half and full face version. GID met and exceeded all the design specs on schedule for the product launch in November 1995. Now, in 1996, not only is this new, improved hockey helmet visor on sporting good store shelves and selling well, but it is being endorsed and worn by some of the NHL players.

The Design Phase

This project was GID's first using CADKEY and Fas SURF. As the skilled and experienced product and plastic designers went through all the normal steps for such a project, they concurrently were discovering exciting things about the capabilities of their new tools. GID has been around since 1975 and has

successfully designed hundreds of products using the traditional methods.

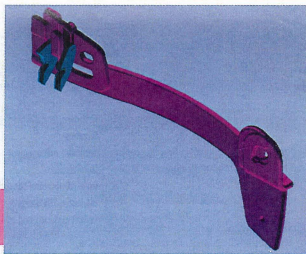
As CADKEY beginners (at least in the early stages of the project), they didn't always do things the most efficient way. However, they learned quickly and kept careful notes about things they will do differently and how to maximize their use of CADKEY and FasSURF for future projects.

From the conceptual designs (no more than hand sketches and rough drape-formed mockups), the design team produced 2D CAD designs based on ergonomic studies. According to Paul Isabelle, primary designer on the project, "We now know that a 3D layout using CADKEY would have been more accurate and faster." Then, first-run prototyping (vacuum-formed pro-



Adjustable pivot support bracket which mounts on helmet

See HELMET, page 13 ⇨



By
Claudia Martin

(Far left) Half model of the mobile jaw protector showing venting and pivot (Left) Half model of visor/helmet interface adaptor showing visor pivot and lock mechanism

Remote Computing Presents New Technological Challenges

Are you one of those "road warriors" — out there traveling with your laptop computer and modem or working in a home office and trying to connect with the company? If so, you are part of a growing trend. You are probably also dealing with some frustrations and problems communicating with home base. Can you access the company network, e-mail system, and your desktop PC easily? How simple and fast is it for you to send e-mails and/or transfer files from Timbuktu? Would you like to be able to do any or all of these things? Would you like to be able to do them better? Exciting things are happening with today's technology that are going to make remote computing easier and better.

Remote Node vs. Remote Control

Microsoft has validated the growing remote computing trend by incorporating an easy-to-use remote access client into the Windows 95 operating system.

This client, called Dial-Up networking, is a revised version of the Shiva® PPP client and can be used to dial into a Windows 95 dial-up server or other popular servers including Shiva NetModem® Novell® NetWare Connect®, or a Windows NT Remote Access Server. Supporting IPX/SPX, TCP/IP, and NetBEUI, the Dial-Up Networking client allows a user of Windows 95 to become a networked "remote node." As a fully functional workstation on a Local Area Network, the user has

access to network servers and network printing.

Remote node access has some drawbacks. While most applications designed for a LAN expect a high-speed connection (Mbps or more), remote node is typically a very slow connection (28.8 Kbps). Therefore, launching an application located on a network server takes an inordinate amount of time. Even many client-server database applications, which inherently request less data from the network, don't run smoothly over a remote node connection. Because of this inherent weakness in remote node technology, many remote computing professionals choose remote control.

With remote control technology, a remote user can dial directly into a host PC. All programs run on the host's CPU with the host's video displayed on the remote client screen. The remote client's keystrokes and mouse actions are then transmitted back to the host machine.

In general, remote control sessions connect to the host locations at the exact same speeds as for remote node connectivity. However, link speed is not the deciding factor for remote access performance. With remote control, only a small portion of data is transmitted to the client PC, such as screen updates and mouse movements. This action gives the remote control user the ability to run network applications at "near real-time" speeds, optimizing a low bandwidth connection.

Remote node and remote control are not mutually exclu-

sive. An optimized remote access environment can employ both technologies simultaneously, giving the end user the ability to choose the type of remote access connection they need dependent on the type of task they need to accomplish.

This article reviews the most common remote computing tasks and discusses the advantages and disadvantages that each technology provides. For clarity, the remote user or individual connecting from a remote location is referred to as a client. The host refers to the computer that a remote user will remotely connect to over various transports. The use of Traveling Software's remote control technology, LapLink® for Windows, also will be described.

Remote Computing from the User's View

A recent International Data Corporation (IDC) study on remote computing polled users on their top concerns for remote computing. Reliability, ease of use and security were their top three concerns. When asked the functions for which remote access was employed, the response was e-mail, text file transfer, and database access, in that order. Whether using remote control or remote node, the same functions were performed.

The following covers both the general and specific challenges faced by both the remote access administrator and the

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KEY SOLUTIONS

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CADKEY INC. PRICE LIST

EFFECTIVE THROUGH MARCH 31

U.S. / Canada Master Price List (U.S. Dollars)
To order, contact your local authorized CADKEY/DataCAD dealer
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Product Name	Suggested Retail Price	Product Name	Suggested Retail Price
CADKEY 7 FOR WINDOWS		CADKEY UPGRADE CONTRACTS - (12 MO.)	
CADKEY / Windows (3-1/2" or CD ROM) - SRP	\$ 795.00	CADKEY Professional (Upgrades for CADKEY and Analysis, Advanced Modeler)	\$ 350.00
CADKEY		CADKEY 7 DOS & WINDOWS	\$ 250.00
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203-298-6420 or FAX 203-298-6590) Call for Quote

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How to Contact Cadkey

Main Offices	203/298-8888
Fax	203/298-6401
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Technical Support	203/298-8888 x8060
BBS	203/298-6405

CompServe
GO CADKEY

Internet FTP site
ftp.cadkey.com

Cadkey user group forum
news@cadkey.com

World Wide Web site
<http://www.cadkey.com>

General comments, requests
webmaster@www.cadkey.com

Typical e-mail address for staff member
darcis@cadkey.com

Neither rain nor sleet halts DataCAD users meeting

News and awards fill NE group's agenda

By Evan Shu, AIA
President, Cheap Tricks

About 50 dedicated DataCAD users braved traveling through a dark and stormy night to descend on Cadkey headquarters in Windsor, Conn., for the Northeast Regional DataCAD User Group meeting on Jan. 24.

Mark Madura, VP of the Cadkey AEC Group bestowed the "long distance travel" honor to Nick Pyner, all the way from New South Wales, Australia. He introduced key DataCAD/Cadkey personnel, including Livingston Davies (president & CEO), Dave Gieselman, Bob Schwein, Clay Rogers, Bernadette Coleman, Mark Hyjek, Dawn Wynkoop, Rebecca Torrence, and Dick Kradzewsky.

Corporate Direction

Livingston Davies presented an overview of the new Cadkey corporate strategy. Davies stressed that Cadkey would continue to focus on applications (i.e., architectural CAD products.) The company believes in modular design components that can be applied across a spectrum of uses. Cadkey will continue to implement the "virtual corporation" strategy of using outside talent to produce many of the products that Cadkey will market, while keeping in-house those functions they can uniquely do best. He also noted that Cadkey will concentrate on the growing trends of developing international partnerships, use of the World Wide Web, creation of multi-media products, and providing low-cost, high-value products for high-volume sales.

As part of the this growing trend toward the use of multi-media, Davies showed the new Cadkey Demo CD, which contains promotional material and images and also a full working copy of Cadkey, although files cannot be saved. He noted that a similar DataCAD CD will be produced in the near future.

A Special Award

Mark Madura presented the first-ever Cadkey "Vice President's Award" to Dave Gieselman for outstanding service to the DataCAD community for more than 11 years. Many old-timers remember Dave as one of the originators of DataCAD back in the Charlottesville, Va., and Microtecture days. Dave recalled how DataCAD started more 13 years ago as kind of a "goad" challenge on the part of Griff Berg, Eric Smith and himself. He said it started to get "scary" when they realized that a number of architecture firms in the area were actually beginning to depend on their product and support for their livelihood. Now that the number is in the tens of thousands of

users, "it's still scary," he noted, but also very gratifying that DataCAD has inspired such loyalty over the years. He said his appearance at the meeting was a very rare occasion as he usually tries to stay away from such gatherings. He made an exception because he wanted to express his thanks and gratitude to all those who have supported the product over these many years.

DataCAD 7.0 and AutoCAD 7.01

Finally, to the meat of the program: Mark Madura noted that he and his staff have been listening very carefully to user comments on the just released DataCAD 7.0. Cadkey is in the process of producing a "patch" upgrade 7.01 to be sent out automatically to all "registered" users (make sure you send in that card!). The patch also will be on the Cadkey Bulletin Board

203/298-6405 and on the Cadkey Web Site (<http://www.cadkey.com>). This patch includes the "Top Ten" bug fix/enhancements. Other coming additions to DataCAD 7 will include Bill D'Amico's update for the AEC Modeler that will allow you to drop in a 3D window or door and automatically cut a void in a 3D wall. Also, 2D walls can be automatically converted to 3D polygons. (AEC modeler update will be part of an upcoming disc update, but not the bulletin board patch update.)

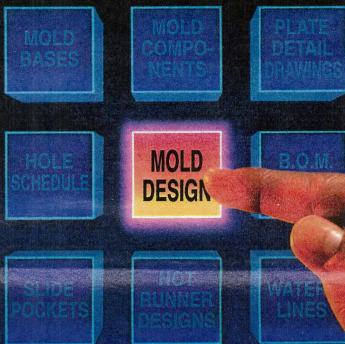
What's Up Next

Mark Madura showed us the two new Windows products that currently are on deck for release in 1996. DCViewer allows you to open any DataCAD file, AutoCAD or DXF file and bring up views in multi-port fashion and dynamically rotate or reset any 3D view. This view can be rendered,

quick-shaded or hidden with output to RenderStar, Renderize, VMRL, or to your printer. DCViewer will work with Windows 95, Window NT, and Windows 3.1 (with Win32S installed). He also demonstrated one of the applications being developed for DC Modeler, a module of the future Cadkey Architect. In a preview of the type of procedure that Cadkey Architect will use in its object-oriented system, Mark showed how a user could bring up a table of values for which desired parameters could be input in any order, with the result showing immediately on screen.

When pressed for dates for these new products, Mark reiterated his promise not to give wild guesses, but only to announce release dates when he could be relatively sure of them. Given his current good track record for meeting his announced release dates, he said he wanted it to stay that way.

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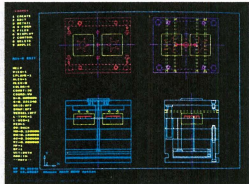
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CADKEY Communiqué

CADKEY IN THE NEWS

■ WINDOWS Magazine Honors CADKEY

CADKEY has been chosen by WINDOWS Magazine as one of the best products of 1995 and has received the prestigious WIN 100 award. The February 1996 issue featured a cover story highlighting the winners. Only 100 products are selected from among the thousands the magazine receives each year for consideration for the award.

The WIN 100 selection process is a yearlong undertaking that involves the entire WinMag editorial staff. From the initial pool of thousands of possibilities, a list of the 100 most outstanding products was compiled.

CADKEY was found to be one of this exclusive class because of its exceptional combination of functionality, performance and price, all key factors in the selection process.

■ New 3D Display List Released

SoftEngine 3D is now available for CAKDEY R7 for Windows Release 2. Created in conjunction with Vibrant Graphics, this add-on software is based on 3D display list technology and provides a dramatic productivity boost for routine tasks such as changing views or file loading.

In addition to significant performance enhancements, SoftEngine 3D adds new Worm's Eye (and FireBird) features. The Worm's Eye allows users to open a viewing window, which displays CAD geometry adjacent to the cursor at a magnified scale, so small details can be inspected without having to zoom or pan around the drawing itself. The FireBird feature enables the user to rapidly view the entire model and perform instantaneous pans and zooms. FireBird also offers the ability to dynamically rotate a model in 3D space and view the model from any vantage point with immediate visual feedback.

CADKEY's Product Manager, Ken Erman, reports, "SoftEngine 3D benchmarks were conducted on a 486/66 PC using part files at least 1MB in size. When changing the display views of a 1MB CADKEY part file containing 3D wireframe geometry and solids, the task is 10 times faster than the current 2D display list technology. A similar, heavily annotated part file, was twice as fast when changing views. Further testing revealed the speed of changing views is even faster than our DOS version of CADKEY 7 running on the same machine. File loading benchmarks also showed speed improvements up to 20 percent. SoftEngine 3D is a low-cost, add-on product that will greatly enhance the daily use of CADKEY for Windows."

CADKEY's SoftEngine 3D is priced at \$149, with a special introductory offer of \$99 for users with update agreements. CADKEY 7 for Windows is priced at \$795. Software may be purchased from authorized dealers or directly from Cadkey by calling 800/394-2231.

■ New Cadkey Distributor

Cadkey Inc. has reached an agreement with Baystate Technologies of Marlborough, Mass., in which Baystate will distribute all CADKEY products and update contracts to the existing VAR (value added reseller) channel. Since 1989, Baystate has been committed technically to CADKEY through the DRAFT-PAK product line. Baystate will continue to provide its current product lines and services.

More Cadkey Dealers

The following Cadkey dealers were inadvertently omitted from the list of dealers published in the December issue of KeySolutions Journal.

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KEYMAIL

Complimentary Issues?

Ever since I have subscribed to KeySolutions, I have received a complimentary copy of the same issue from Cadkey. Why should I pay for one if one is given to me?

Bob Fitzpatrick

Escondido CA

First, thank you for being a KeySolutions subscriber. In the past, Cadkey has mailed KeySolutions on a limited, complimentary basis to a number of users. In a few scattered instances, that mailing has duplicated the KeySolutions subscriber list. We are working hard to avoid such duplication in the future and appreciate your patience in the meantime.

Super Typo Caught

Thank you for the publication of your Cadkey Third-Party Products Section of Key Solutions about our product CAMCAD. We appreciate the notice. However, we are obligated to bring to your attention that our product was referred to as "CAD-CAM" in the article. The problem is that CAMCAD is not copyrighted name for the electromechanical tool to which the article referred, and we believe that CADCAM is either a public-use name or copyrighted name currently held by someone else. In either case, we do not want to have our product confused with any other product. We are continuing to make CAMCAD a truly unique presentation for the industry.

Robert R. Barid
Chief Operating Officer
Router Solutions Inc.
Newport Beach, CA

Our sincere apologies for the mistake on the name of your very excellent product. We were glad to be able to include the information on it as a service to our readers.

Suggestions and Questions

We have been reading KeySolutions since it started. Back when each

issue came in a magazine format, it was much easier to store for future reference. Now that it is in a newspaper format, it is very difficult to store and also does not stand up well in the mail. We both use CADKEY on a daily basis, and now there seems to be more information about DataCAD than CADKEY.

On another subject, a tablet is a very fast way to work with CADKEY, but, alas, it does not work with CADKEY for Windows. Is there anyone that knows of or knows how to write software that would allow the user to bypass all the buttons needed to accomplish each task in the Windows version? Until an overlay for CKWIN is available, we feel that the DOS version is faster. How many other users feel this way?

Todd J. Bennett
Engineering Services Specialist
Paul R. White,
Product Development Engineer
Finish Thompson Inc.
Erie, PA

We have received other comments from readers who prefer the old magazine-size format. We are studying the feasibility of returning to the smaller size and will keep you posted. One of our goals this year is to upgrade and increase the overall technical content of KeySolutions for CADKEY and DataCAD. Be sure to tell us what topics you want to see covered. Do any other readers have suggestions for the digitizer overlay and input speed dilemma in CADKEY for Windows?

Interest in 3D Modeling

We are using CADKEY for more than two years. Our main applications are 3D design of RPV's and other high tech designs. We would like to read articles regarding 3D design with FastSURF and Advanced Modeler. Right now I am concerned about CADKEY's future in solids since the Advanced Modeler is still very poor in performance. Is version 9 going to

be a breakthrough? Is there any other Solids software that works well with Cadkey?

Rony Lotan
Project Manager
AD&D Aero-Design & Development Ltd.
Rohovot, Israel

Version 8 should bring significant improvements and will be released any time. In addition, FastSURF is preparing a CDE called FastSOLID that is excellent. It is scheduled for release in or around March. You can contact FastSURF for details. We also will have an article in April or May on these two products.

Generation X Finds Windows

With the universal acceptance of the Windows operating system, reading, writing and using Windows have become the new job skills required for the employable. The Windows operating system is so pervasive that the very availability of a Windows application almost guarantees that product's instant market success. In the past, only CAD/CAM professionals were potential customers. Windows has radically changed our customer base. Today, everyone using Windows is a potential CADKEY and FastSURF customer. The Windows generation wants to animate, they want to render, and they want to prepare cool-looking graphics. For them, there isn't a better way to introduce geometry into their Windows graphic application than by way of CADKEY and FastSURF. Generation X may be lost, but they have found Windows.

Robert White
President, FastSURF

For your letters, comments, suggestions and questions to 509/928-4937; e-mail key.solutions@non-ramp.ior.com; mail to Editor, KeySolutions, E. 9415 Trent Ave., Spokane, WA 99206

Workshop series, booth to spotlight Cadkey at ITEA

By Justyn Amrosa
Marketing Manager
Tech Ed Concepts

CAD workshops in education will be presented in a series of workshops and in a display booth at the 1996 International Technology Education Association (ITEA) Conference by Tech Ed Concepts and Cadkey Inc. The ITEA conference, the largest of the year for educators, will be March 31-April 2 in Phoenix, Ariz. ITEA is the professional organization of technology educators. Members include elementary through high school teachers, supervisors, administrators, teacher educators and others interested in the future of technology education. ITEA's mission is to promote technological literacy in today's educational system.

Conference representatives from Tech Ed Concepts are Dr. Len Nasman, president of Microcomputer Education Systems and author, and Dick Amaros, president of Tech Ed Concepts Inc., Livingston Davies, president and CEO of Cadkey Inc., also plans to attend. Len, Dick and Livingston will be available at the Cadkey booth, speaking with current CADKEY and DataCAD customers, making new contacts, offering assistance and doing some genuine "mingling." If you're an educator, you can't afford to miss the opportunity to stop by for free materials, as well as about the projects your students are working on with CADKEY and DataCAD or to introduce yourself.

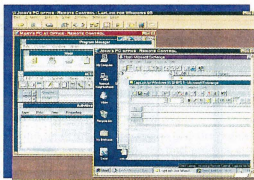
A new undertaking by Cadkey Inc. is the presentation of an ITEA Action Lab. The purpose of the Action Lab is

to directly present the current trends of technology education to educators. Two workshop sessions will be offered on Tuesday, April 2 in Room 19. Educators are invited to attend one or both of the sessions.

The first workshop session, "Planning the Future of 3D CAD & Solid Modeling in Your Classroom," will be held from 9-10:15 a.m. and will focus on how to prepare yourself, your lab and your students for the future with 3D CAD and Solid Modeling without losing sight of the design process. The second, "Corporate Expectations of School-To-Work and Tech Prep Programs," will be from 10:30-11:45 a.m. It will focus on the future of School-To-Work and Tech Prep Programs and what you can do to prepare your students to meet corporate standards. Both sessions will be presented by Tech Ed Concepts Inc., with guest speakers Livingston Davies and Dr. Len Nasman. Everyone who attends receives free software and an Action Plan.

In addition to Livingston Davies' attendance and the ITEA Action Labs, we plan to have an outstanding booth display. Cadkey Inc. will be represented in booths #21 and #23. Promotional items, free CADKEY 7 for Windows Demo Disks, hands-on demos, one-on-one assistance, product and support material literature and more will be available.

Cadkey Academic Sales are supported by a network of Authorized Cadkey Academic Dealers. For more information regarding your local dealer, academic dealers, training, support materials or other needs, call 800/338-2238. Contact Tech Ed Concepts Inc. at 35 South Main St., Concord, NH 03301; phone 800/338-2238, fax 603/225-7766, e-mail TEConcepts@AOL.COM



LapLink for Windows

LapLink Single solution for staying connected

LapLink® for Windows 95 from Traveling® Software, the first product to offer universal mobile access for mobile professionals, eliminates the need for multiple remote communications applications. LapLink for Windows 95 allows users to connect to their desktop or network resources through modems, providing integrated remote control, file transfer, chat and remote networking (remote node) functionality in one product. LapLink gives mobile users a complete range of the connectivities needed for working in or out of the office including Dial Up Networking; simultaneous connection to TCP/IP and IPX networks; infrared, serial, parallel (including EP/ECP) cables; and the Internet.

Users can instantly connect from wherever they are without reconfiguring LapLink. It does away with the need to manually set up modem connection and other dialing information.

Because it takes full advantage of the Dial Up Networking support for remote access servers, remotely accessing a PC for multiple users becomes a one-phone call process.

LapLink for Windows 95 maintains backward compatibility to the 16-bit version. LapLink for Windows, Traveling Software is the only remote access software vendor to include both the 16-bit and 32-bit Windows 95 version in a single package. Providing both technologies in one package guarantees users a smooth transition to Windows 95 while safeguarding their Windows 3.1 investment. LapLink for Windows 95 includes serial and parallel cables, and a smart installation of the 16-bit and new 32-bit software and documentation. The price is \$149. Registered users of LapLink for Windows can upgrade for \$49.95.

For more information, contact Traveling Software at 800/343-8080 (US calls only) or 206/483-3088.

Tadpole

Little notebook nothing to laugh at

By Robert Martin

It's a funny name for any computer, even a notebook, but the Tadpole P1300 is no laughing matter. It's an "industrial strength unit" clearly adequate for the needs of the most demanding CADKEY or DataCAD user. Maybe it's a tadpole because it's small. Anyway, even though it weighs only 7.5 pounds including the battery, it's powerful. It has a 133MHz Pentium processor and an integrated 256KB secondary write-back cache, a 64-bit memory interface and high-bandwidth PCI local bus. RAM is clearly upgradable from 8MB to 128MB; large capacity hard drives from 340MB to 1.2GB are available; the 10.4-inch active matrix true-color at 800 x 600 is great for CAD on the road and, if you plug in an external monitor, you can work at 1024 x 768.

The Tadpole P1300 has direct I/O ports for external mouse, external video, parallel port, floppy disk drive and headphones. A mini-docking station option uses a 260-pin expansion connection to provide all the direct I/O ports and additional interfaces for SCSI, stereo audio I/O, external keyboard and a serial port. A full docking station option offers a range of desktop computing functionality, including mass storage options, network connectivity and add-in-card expandability.

The system includes a PCMCIA slot supporting one Type III or two Type I or II PCMCIA cards, an integrated pointing stick with three-button mechanism, an external 3.5-inch floppy disk drive, and an



Tadpole has a 133 MHz Pentium processor, 1.2GB hard drive, 10.4-inch screen and weighs just 7.5 pounds

internal NiMH (nickel metal hydride) battery. An external removable hard disk drive (up to 1.2GB) and an external NiCd (nickel cadmium) battery pack are available as options. The internal battery provides up to 1.5 hours typical operating time and the optional NiCd clip-on battery pack provides up to 2 continuous hours.

I especially liked the "stick-type" pointing device. It was much easier to use than those infinitesimal track balls so common on notebooks. You know, the awkward ones that really slow you down.

In addition, the Tadpole P1300 is Windows 95-ready and is Plug & Play compatible. If Windows 95 isn't your bag, Tadpole has integration support for Windows NT and/or IBM's OS/2 WARP. Tadpole provides users with installation support and assistance with the required specific device drivers for both operating systems. This flexibility is a reflection of the Tadpole Technology emphasis on modular architecture. The processor can be factory-upgraded to future Pentium processors or, in the future, "side graded" to other architectures.

Tadpole Technology Inc. designs and manufactures ultra-high performance, durable notebook computers and board-level and software products for OEMs and end users. Established in 1984 and publicly traded on the London Stock Exchange, Tadpole Inc. is headquartered in Cambridge, England. U.S. headquarters are in Austin, Texas.

It's a little pricey, compared to low-end notebooks, but it is top drawer with the power required by serious CAD users. Tadpole Technology has a higher-end notebook, the P1700. Suggested list prices for P1300 systems configured with 8MB DRAM and a 340MB hard drive, the external floppy drive, internal battery and leather carrying case start at \$6,995.

For more information contact 800/232-6656.

Tadpole P1300

REMOTE from Page 1

individual remote user. It covers electronic mail, file transfer, database and application access, and roll-out strategies for the successful implementation of remote control and remote node technologies.

E-mail

E-mail is the most often-used remote computing function. E-mail also is one of the most developed client-server applications, in that clients such as Microsoft Mail, Lotus ccMail, and Lotus Notes are nearly identical in form and function.

With all of this solutions, a remote client is available and users can dial in to retrieve messages or message headers. Composition can be done off-line and messages sent in batch mode. However, remote client e-mail solutions have a few inherent weaknesses: the end user must maintain two message files, one on a laptop and another on a desktop machine or network file server. While browsing stored messages on the desktop, messages stored on the laptop are not available, and vice versa. The other issue for remote mail products is one of security. If the intended recipient receives confidential e-mail on a regular basis, this separate database of electronic mail is at risk. The mail is no longer contained on a network file server, where it is relatively secure. It now sits at an individual's house, or worse, on a roving laptop.

Remote control can solve these problems. If the remote user dials in and runs the e-mail client on a desktop PC, then only one message store is involved and no synchronization is required. Remote control also solves another related issue—the mail client may not run on the remote PC. For example, a remote user may use the Windows 95 exchange client on the desktop, but have only Windows 3.1 on his or her laptop. With LapLink, the user can dial-in and use Exchange for all e-mail functions.

File Transfer

File transfer presents several unique challenges for the end user. Performance is always the primary concern when transferring a file from one location to another. The longer the file transfer, the higher the cost for the overall connection.

There are many ways to reduce the total time for file transfer. Using an interface that is easy to navigate and start the file transfer process saves time. Creating a multi-tasking environment in which the user can start a file transfer and retain remote control of the host PC increases the overall productivity of the connection and helps to offset the file transfer "wait-time" associated with many remote computing applications.

In terms of performance, LapLink's proprietary protocols and compression automatically reduce file transfer times. Traveling Software has performed studies that show that in more than 50 percent of file transfers, a user is actually overwriting an older file with a newer file of the same name. SpeedSync™—which transfers only the difference between such files—can reduce transfer times up to 80 percent. The file transfer capability in LapLink has been optimized for ease of use. Upon opening a connection, a user automatically is presented with two windows representing the two connected LapLink machines. A simple "drag-and-drop" starts the file transfer process. Also, settings for newer files, existing files and subsidiary inclusion are easily changed for individual transfers.

For secure connections, LapLink provides individual user-level security access. When combined with a NetWare or Microsoft Windows (95 or NT) networking platform, either through remote node or remote control, complete security integration is achieved.

Database and Application Access

There are many different types of professionals that need remote access. The range varies from the true "road warriors" that are always armed with a laptop and modem, to individuals who work exclusively from home. No matter what the individual work strategy is for the remote user, one thing remains consistent—that is the need for database and application access from a remote location.

According to the IDC data, of all the people considering remote access today, fully 67 percent need remote access after work hours. One of those people surveyed, 56 percent want to have access when traveling and 39 percent want to do some from telecommuting. Their application needs can range from simple remote e-mail access to the replication of the entire LAN workstation environment. End users need access to two types of PC-based application: s: client server applications, primarily databases and e-mail, and productivity applications, such as word processors and spreadsheets.

With the increasing number of affordable high-powered laptop computers and home PCs, productivity applications can generally be installed on remote PCs. These do not require remote access unless licensing and cost issues dictate that the applications only reside on the LAN or remain in certain workstations. If this is the case, remote control provides a cost-effective method of extending access to remote locations.

Modern client-server applications can gain advantage of remote node connections. However, older or customized applications that may be optimized for full network speeds are best run with remote control. In addition to accessing a network database, the remote user often will have data stored on his/her office PC, such as personal database or contact manager. This data at times may be more valuable to the remote user

See REMOTE, page 13 >

REVIEW PORT

Mathcad

Mathcad works like an electronic scratch pad

By Robert Martin

Mathcad, MathSoft's technical calculation software, works like a scratch pad for engineers, scientists, students and mathematicians, but it does the math for you. You can write equations, using real math notations, anywhere on Mathcad's unique live worksheet. You can select from hundreds of math symbols, operators and Greek letters by clicking on a palette. You can visualize data or solutions by creating graphs and animations, and you even can add text notations above, below or next to your equations.

Most importantly, Mathcad provides the advantages of automatic calculation. Change a variable and the new results are

calculated instantly. Mathcad can perform simultaneous equations, derivatives and integrals, Fast Fourier transforms and hypothesis testing and simulations. Mathcad provides trigonometric, hyperbolic, exponential and Bessel functions, lets you work with scalars, vectors and arrays, and much more. In addition to its distinctive "live" document interface, Mathcad has built-in e-mail and World Wide Web and Lotus Notes connectivity.

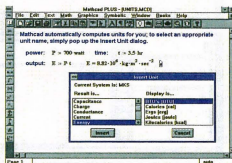
Now MathSoft Inc. is bundling a special version of Visio Corporation's Visio® Express software with Mathcad 6.0 PLUS and Mathcad 6.0 Standard Edition. This combination gives Mathcad 6.0 users instant access to Visio's drawing and diagramming tools to integrate technical illus-

trations in Mathcad documents along with calculations, text and graphs.

This special version of Visio Express allows users to create technical drawings or schematics by simply "dragging and dropping" Visio SmartShapes® from the software's wide range of electronic stencils.

Visio drawings and diagrams then can be inserted directly into Mathcad documents. Visio Express for Mathcad's collection of multiple purpose and drawing templates includes a comprehensive electrical engineering template. Users also can create custom stencil and templates.

The addition of these powerful drawing and diagramming capabilities are a terrific enhancement. It's the only integrated environment for illustrating and sharing techni-



Mathcad

cal information that I know of.
New purchasers of Mathcad 6.0 (PLUS or Standard Editions) automatically receive a copy of Visio Express for Mathcad. Existing registered users of Mathcad 6.0 can order a copy of Visio Express for Mathcad from MathSoft's Web site at <http://www.mathsoft.com> or phone 617/577-1017.

MATLAB

Fuzzy logic is latest MATLAB toolbox

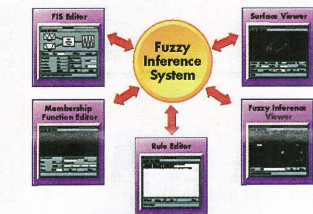
By Robert Martin

MATLAB is a powerful, comprehensive and easy-to-use software environment for performing technical computations. It provides engineers, scientists and other technical professionals with a single interactive system that integrates numeric computations and scientific visualization.

It's good stuff. MATLAB has a really excellent reputation for speed and accuracy. They're the ones who developed the fix for the Intel Pentium® floating point error in 1994. Their numerical algorithms are programmed by leading experts in mathematical software and the numerical techniques are based on well-established robust algorithms. The internal code of MATLAB software is carefully optimized in C, with important inner loops hand-coded in assembly language. This allows it to outperform other interactive math software packages as well as C and Fortran subroutines.

In addition to the core product, The MathWorks produces application-specific solutions called toolboxes. Toolboxes are libraries of MATLAB functions that customize MATLAB for solving particular classes of problems, such as signal processing, image processing, symbolic math, statistics, neural network design and others. The latest MATLAB toolbox, Fuzzy Logic Design, is released in March to support the design of fuzzy logic systems.

After nearly 30 years of research, fuzzy logic has proven its worth as a practical engineering and problem-solving tool. Fuzzy logic is ideal for modeling and controlling complex, nonlinear systems because



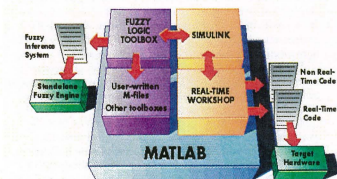
The GUI tools in the MATLAB Fuzzy Logic Toolbox support the essential tasks in the fuzzy system design process.

it systematically handles ambiguity. In contrast to the black-and-white, true-or-false world of traditional logic, fuzzy logic lets you use degrees of truth to describe system behavior. This dramatically simplifies the solution of many engineering and decision support problems, even when rigorous mathematical models are not available.

Fuzzy Logic Toolbox makes fuzzy technology accessible for a much broader range of applications, including research, design, simulation and real-time implementation. The technology simplifies the design and manufacturing of complex products by using simple English statements to specify rules for system behavior. Unlike conventional programming logic or expert systems, fuzzy logic statements may be partially true, which results in more accurate representations of real-world systems. Fuzzy Logic allows engineers to design products by specifying systems and data with attributes such as "warm," "faster," and "slippery." This capability streamlines the engineering process and produces simpler, less expensive and more reliable products.

To help engineers learn about fuzzy logic, The MathWorks has added tutorials and demonstrations of fuzzy logic's practical engineering applications to its Web home page located at <http://www.mathworks.com>. Pricing for Fuzzy Logic Toolbox 1.0 starts at \$895 for North American commercial customers and can be purchased with The MathWorks' MATLAB and SIMULINK products. MATLAB is required to run the Fuzzy Logic Toolbox.

For more information phone 508/653-1415 or e-mail info@mathworks.com



The MATLAB Technical Computing Environment provides a comprehensive framework for fuzzy design, simulation and real-time implementation.

INTERNET IN A BOX

Internet In A Box: All you need to go online

By Robert Martin

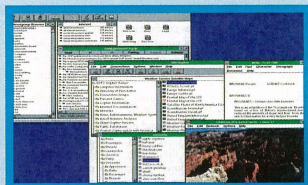
Internet In A Box is a set of solutions for Windows users who want to connect to the Internet. It includes, in fact, a full suite of software including SPRY Mosaic®, the first commercially supported and enhanced version of Mosaic (the Internet's most popular multi-media browser), easy-to-use versions of Electronic Mail, USENET news, FTP, Gopher, Telnet and a Multimedia Image Viewer. Also included is much better than average documentation that clearly describes how to use all these resources, including Getting Started guides and a special edition of Ed Krol's bestselling "The Whole Internet User's Guide," and access to the Compuserve Information Services.

The producers of Internet In A Box are a division of Compuserve. Obviously, they would like you to join Compuserve, but you don't have to and can choose online access with any local service provider and still take advantage of most of the package's features. It's true that many local service providers provide software as part of their setup fee and we've have used it. It was shareware, worked just fine, but just didn't have as many features as Internet In A Box. The one I especially like is that SPRY Mail® supports spellchecking for e-mail if Microsoft Office is installed. There also is an offline mail reader that allows you to read and compose mail without connection charges.

Here a few of the other goodies. Network File Manager® is the only implementation of FTP that fully integrates with Windows File Manager. You can perform drag-and-drop transfer and copy multiple files are once. SPRY News® lets you search articles or news groups by keyword to get the information you need. SPRY Gopher® provides Internet search-and-retrieval application with a built-in tree structure for easy navigation. You also can create custom windows to quickly access your favorite Gopher sites.

Internet In A Box is sold through computer retail outlets and bookstores. Suggested retail price is \$149.

For the name of a dealer, call 800/557-9614 or send an e-mail message to iboinfo2@spry.com.



Internet In A Box

Understanding Solid Modeling: The competition heats up

By Michael L. Gersten

There is no doubt that most engineers and designers today have, at some point, considered purchasing or already have purchased a solid modeling package. If you are one of those people who have not yet purchased, and are confused as to which is the right software for you, perhaps the following information will help clarify some of the terms and offerings.

This article may help you gain some perspective on the subject and, at the very least, you will be able to intelligently process all of the sales jargon, as software vendors position their products against the vast and growing competition.

Solid modeling is intended to give the engineer/designer a conceptual view of a part as the final product, essentially "an on-screen prototype." This approach to CAD was heralded as and, subsequently, has become a huge time and money saver.

Parametric modeling burst upon the CAD scene in the late 1980s. It promised huge productivity gains by virtue of its ability to capture the design process—in particular, the interrelationships between the various parts of the design—and then, when the designs were altered, have the entire model automatically updated to reflect those changes.

As the designers gained more experience with the parametric systems, they began to see that, along with the advantages of the approach, there were significant drawbacks. One major drawback is that the user must "constrain," or define the geometric or algebraic relationship of all the geometry, in order for the system to understand how to use it. By employing sets of rules that define how changes to groups of geometric elements will be handled as the model is built, the user may unknowingly be establishing editing restrictions that can, as every engineer well knows, surface down the road.

The central issues with solid modeling modes today are:

- How to capture parameters and constraints (variables) such as geometric, engineering equations, positional and non-geometric relations.

- How to relate keywords and user actions to these parameters and constraints.

- How to capture design intent and to make it available for other downstream applications, such as computer-aided machining or analysis/optimization.

- How to provide for later revisions to these variables.

Variable-driven solid modelers capture the design intent during the product definition, by capturing those relationships that exist within the design model and the processes used to define it. This approach allows the part to be readily edited. Editing a design can be done simply by changing these relationships.

There are three primary techniques used by today's solid model offerings. The first and most recognizable is parametric modeling. This technique employs the ability to

create and capture a transaction history of geometric construction, in a sequential manner, in order to provide editing capabilities. The advantage of a parametric definition is its solution speed. The disadvantage is that the users must specify all of the necessary information to solve the orientation of an element before the next element is defined.

Variational modelers allow the user to design without being concerned about the specific order in which relational constraints are placed or solved. Users can define the geometry of the part using a natural evolutionary process. One benefit of the variational approach is the ability to solve unconstrained geometry. Users can specify what is known in terms of constraints, find a valid solution, then evolve to a fully constrained state.

An example of this is the definition of two parallel lines.

**Engineers
can expect
solid modelers
to continue
to evolve**

Line A may be parametrically defined as a line parallel to line B. As a result, line B may be moved, causing line A to move. However, line A cannot be moved directly. A variational definition would merely state that lines A and B are parallel, allowing either to be moved while maintaining the constraint.

Feature-based modelers offer geometric entities such as holes, ribs, slots, etc., that store information about their shape, location and volume. When the dimensions of an object change, the entity associated with it will also change.

Engineers can expect today's solid modelers to continue to evolve. We recently have witnessed a dramatic price reduction by the more recognized offerings, along with the introduction of several new packages priced under \$5,000. Selecting the right solution for your needs means evaluating various systems and selecting the one that is best suited to your type of designs and your product development cycle.

Choosing a hybrid solid modeler, that offers you the flexibility of parametric, variational and feature-based capabilities all in one package seems to be the wisest choice.

Look for a hybrid offering wire-frame, surfaces and solids modeling in one package, and a vendor who provides seamless integration to all three, and you will have complete control of your design process.

Michael Gersten is Sales Manager at VEA Communications. Previously, he was sales manager with Nourate Engineering in Southern California, a VAR representing CADKEY, Intergraph and ComputerVision.

Finally, imagine this: for

just \$2,495 you can own a state-of-the-art software package that lets you get existing and future paper drawings directly into CADKEY—quickly and easily—and put that skilled engineer back to work doing the professional job he was trained to do.

CADKEY Overlay® actually integrates raster images into CADKEY part files right within CADKEY. This unique capability means you can produce CAD engineering revisions of paper drawings without unnecessary redrawing. A raster image of the scanned drawing can be placed on its own layer. Then you trace or redraw only the sections that need modification. CADKEY Overlay also lets you integrate photographic images with your CAD drawings.

CADKEY Overlay is flexible. You can manipulate, save and plot the raster images with the CADKEY part file. You can pan, zoom, rotate, change color, snap to raster images and more.

So you don't have to spend lots of time and money to convert paper drawings. With CADKEY Overlay, you can get back to work. Real work, that is.

Software only \$2,495. Call for pricing on a complete system with D- or E-size 300dpi flatbed scanner.

For the name of your nearest dealer, call 509/928-5169.

**CADKEY
Overlay**

Imagine this:
Some guy somewhere is being
paid \$50 an hour to re-enter
existing drawings.

Now imagine this:
You're the one
who's paying him.



MOVING?

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Call

(509) 928-5169

or fax

(509) 928-4937 for

change of address

SOFTWARE

HP-RTL output drive

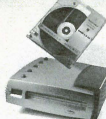
Byers CADNET has developed a new HP-RTL 4-pass (CMYK) output drive for use with Hewlett-Packard 650C and the new Hewlett-Packard 750C plotters. With the new driver, throughput is improved when processing color vector files with black and white raster files. The raster file is only scanned once rather than the three times required by the 3-pass RGB driver. When processing color raster files, the 3-pass (RGB) driver will be faster. The driver is available for use with Byers Plot Station 7.3 and is included with the 3-pass driver package.

Contact CADNET at 404/843-1000 or fax 404/843-1004.

Ray Dream Studio for Windows

Ray Dream Inc. is shipping Ray Dream Studio for Windows, the first cross-platform, fully integrated 3D imaging suite for creating 2D illustrations and animations on the desktop. Ray Dream Studio integrates four components — Ray Dream Designer 4, Ray Dream Animator, Dream Models and Extensions Portfolio — that combine advanced illustration and animation features with ease-of-use to meet the needs of both the experienced professional and the 3D novice. Ray Dream Studio supports Windows 95, Windows NT and Windows 3.1. Ray Dream Studio is available on CD-ROM with a suggested list price of \$499 and has an exclusive 90-day money-back guarantee. System requirements include a color-compatible 486 or Pentium-based PC running Windows 3.1, Windows 95 or Windows NT, 12 MB RAM and 20MB hard drive for program files plus 20 MB free disk space.

Contact Ray Dream Inc. at 800/846-0111.



Fotog-FMS version 2.0

Fotog-FMS version 2.0 Vexcel Corp. has released version 2.0 of Fotog-FMS, an advanced close-range photogrammetry software. The software provides the ability to process photographic images to obtain accurate field measurements and create 3D as-built CAD models. Fotog-FMS runs on standard hardware and does not require extensive photogrammetric expertise to operate. The software operates in the MicroStation CAD environment on Windows NT and Silicon Graphics/UNIX platforms. Improvements in version 2.0 include faster image block formation speeds, new image processing tools, the ability to rotate and resize image windows, enhanced image database management features, and support for Kodak's DCS 420/460 monochrome and color cameras.

Contact Vexcel Corp. at 303/444-0094 or fax 303/444-0070.

Krusse for Windows Enhancements

Krusse Control for Windows v2.0 now supports redlining for CAD drawing and image file markups. Enhancements contained in the release include support for more than 150 file types providing true WYSIWYG viewing and printing, the addition of a TWA/N-compatible scanner interface, and Windows 95 compatibility. The redlining tool kit works outside of the CAD application, ensuring the integrity of the original drawing. Other features of v2.0

include the ability to automatically import ASCII and user-defined files into its database, database search results now can be sorted on user-selected criteria, free-form text search in the comment field, printing a drawing section directly from the Krusse Control screen, and temporary directory creation.

Contact Kruse Inc. at 800/272-5659.

Internet In A Box 2.0

SPRY, part of Compuserve's Internet division, announced the release of Internet In A Box 2.0, which integrates online service with a complete Internet solution. The software includes a free copy of Compuserve Information Manager software, low-cost Internet access pricing, a secure World Wide Web browser and more than 50 additions and enhancements to SPRY's full Internet suite. Internet In A Box 2.0 customers can automatically create local Internet accounts in more than 11,750 communities across North America, with a choice of two pricing plans. Users also can employ any Internet service provider with Internet In A Box. Other features include a secure version of Mosaic, Internet Wizard, improved integration of mail and news within a Mosaic Internet wallpaper, Media Launcher and Internet Quick Tour. A free upgrade is available to those who purchased Internet In A Box after April 10, 1995. For previous customers, there is a \$39.95 upgrade charge. Internet In A Box comes with 90 days of technical support.

Contact SPRY at 800/5578-9614 ext. 26, or e-mail thespry@spry.com or on the Web at www.spry.com.

Self Serve Software

A new service that allows users to order, pay for and receive software upgrades online is making its maiden run on Scan95, an anti-virus software from McAfee Associates Inc. Each copy of the software, bundled on thousands of computers and peripherals, comes loaded with an on-line upgrade program from Cdi Inc., called Self Serve Software. Users access the program through a menu option to select either a one-time upgrade or one- or two-year upgrade subscriptions. The 32-bit service then intuitively senses the most direct route to Self Serve software's client server, either via mode, Internet or the user's network's connectivity path, and sends the order and encrypted credit card information to the server for processing and approval. The server fulfills the order electronically, transmitting the upgrade with a registration key valid only on the Customer's PC. Security is ensured through a proprietary "secret key," private T1 phone line and a variety of other mechanisms.

Contact Cdi Commerce Direct International Inc. of Issaquah, WA.

HARDWARE

ViewSonic Optiquest Monitors

ViewSonic Corp. has expanded its Optiquest line of monitors with the ultra-sharp Optiquest V775. This 17-inch monitor offers an ultra-fine 0.26mm dot pitch for high-definition displays and delivers a maximum non-interlaced resolution of 1600x1280. The Invar Shadow Mask keeps electron beams aligned with proper target location and dramatically reduces color convergence error. The Optiquest V775's many features include on-touch OnView control system to adjust screen images, ViewMatch to match screen colors to printer output, overscan capability, and digital controls providing 20 custom-programmable modes. It also features Plug and Play compatibility with a Windows 95-compatible video card. Optiquest V775 carries a three-year limited warranty; suggested

retail price is \$895.

Contact ViewSonic Corp. at 800/888-8583 or fax 909/869-7958.

3400X FastPort Print Server

ENCAD Inc. announced the 3400X FastPort Print Server product family. The 3400X is designed to provide an easy network connectivity solution for any printer that provides a standard Centronics parallel port. The micro-sized 3400X plugs directly into the printer's parallel port, providing simultaneous "server" communication with TCP/IP, NetWare, EtherTalk, OS/2, LAN Manager and Microsoft Windows network environments. The 3400X will be offered with a 10BaseT or 10Base2 connector providing attachment to the vast majority of worldwide network installations. The ENCAD 3400X print server has a suggested retail price of \$439.

Contact ENCAD at 800/45ENCAD.

Orchestra MultiSystems monitors

Orchestra MultiSystems Inc. has added two new monitors to its Brass Series family of 1415/17-inch color monitors — the 17-inch Tubu II and the 15-inch French Horn II. The two new monitors feature high-performance specifications and target business graphics, home office and desktop publishing users, and offer Windows 95 Plug and Play compatibility option. The Tubu II features an ultra-high resolution of 1600x1280 dpi non-interlaced at an 82 Hz refresh rate. It provides an on-screen menu for advanced adjustments of rotation, trapezoidal pin cushioning, degaussing and RGB color correction/tuning. A digital control panel is located on the front of the monitor for push-button ease. Other features are overscanning capability and an edge-to-edge screen image for maximum viewing area, and a non-glare coating. The French Horn II is a high-performance color monitor for those with space limitations. Featuring a maximum resolution of 1280x1024 dpi non-interlaced at a 60 Hz refresh rate, the French Horn II also incorporates an on-screen display menu. Both monitors carry a three-year warranty.

Contact Orchestra MultiSystems at 800/237-9988.

SMILE Color Monitors

SMILE International introduces the 15-inch CA1516SL and the 17-inch CA1716SL, the first color monitors in the company's new Rev Series product line targeted to the reseller channel. The new PC- and Macintosh-



SMILE

compatible monitors are members of a product group distinguished by an On-Screen Display (OSD) menu system that provides image-adjusting controls (parallel/vertical, trapezoid, tilt/rotation) and a case of operation for CAD/CAM and desktop publishing professionals. The new products also offer a horizontal refresh rate of at least 64 KHz and a vertical refresh rate of 50 to 100 Hz. A 1280x1024 non-interlaced pixel resolution and ultra-fine 0.28mm dot pitch provide clear images and flicker-free viewing. The monitors feature Invar Shadow Masking and non-glare, anti-static coating. The suggested retail prices are \$420 for the 15-inch monitor and \$720 for the 17-inch monitor.

Contact SMILE International at 800/876-4522.

Tadpole P1000 screen option

Tadpole Technology Inc. is offering a new screen option for its P1000 series of 100 MHz Pentium PCI local-bus notebook PCs. The company also is providing integration support for users of OS/2 Warp and Microsoft Windows NT 3.5 on all models of the P1000. The new P1000G features a 10.4-inch high-resolution internal 800 x 600 pixel TFT display that supports the display of 256 colors simultaneously from a choice of 262,144 colors. It provides internal SVGA resolution, a 100 MHz Pentium processor with a 256K second-level cache, and memory capacity of up to 128MB, and allows users to run processor-intensive applications such as CAD, modeling, real-time simulation and multi-media. Suggested retail prices start at \$6,495.

Contact Tadpole Technology at 512/219-2200 or fax 512/219-2222.



Pinnacle Micro Recordable CD System

Pinnacle Micro Inc. introduces a new generation of recordable CD storage systems which includes a 4X (quad) CD reader and 2X CD recorder. The new RCD 5040 comes in both internal and external models. The PC version comes with a special OEM configuration of Corel's CD Creator 2.0 software. The Macintosh version includes Pinnacle's new CD Burner 2.0 mastering application software, which has a new graphical user interface and offers the most comprehensive support for the Mac environment. Both PC and Mac versions include custom Backup Utilities, Photo CD Recording and Viewing utility, as well as Corel stock photos, clip art images 100 motivational digital video clips and two blank CDs. The internal PC version retails for \$995, and the external Mac or PC version retails for \$1,295.

Contact Pinnacle Micro at 714/789-3000 or fax 714/789-3150.

Olympus Image Systems OS540E

Olympus Image Systems Inc. has released a super-fast, 2.6GB, 5.25-inch magneto-optical drive, the OS540E. With a disk rotation speed of 3600 rpm, the MO540E is the fastest ISO-compliant MO drive on the market. The new MO drive provides twice the capacity and nearly twice the transfer rate of the prior mechanism and offers backward-compatibility with the earlier MO products. The drive delivers sustained data transfer rates up to 4MB per second, seek times of less than 26 msec and an on-board buffer memory of 4 MB for more rapid storage and retrieval of large files.

Contact Olympus Image Systems at 800/347-4027 or fax 513/844-5339.

ELSA GLoria

ELSA Inc. offers a new single-slot 3D, 2D, and video graphics accelerator called the GLoria. GLoria uses the 3Dlabs GLINT 300 SX 3D processor and a dedicated S3 Vision 968 processor for video and 2D. GLoria is capable of shading 300,000 Gouraud-shaded polygons per second and provides 16MB of on-board memory for high-resolution graphics and 3D rendering applications. GLoria also enables full-motion video playback (30 frames per

second) through its built-in display control interface and provides 32-bit color (24-bit 16.7 million colors with an 8-bit channel reserved for transparency option). Pricing for the ELSA GLoria starts at \$2,990.

Contact ELSA Inc. at 408/565-9669 or fax 408/565-9650.

Olympus CD-R2/ISA upgrade

Olympus Image Systems Inc. has upgraded its CD recordable subsystems of its CD-R2/ISA to support both Windows 95 and Windows NT featuring 32-bit native recording software. The CD-R subsystem was designed to create CDs for content archival, software distribution, multimedia development and print-on-demand applications. It provides multi-session recording capabilities and incorporates 1MB data cache memory. The Olympus subsystem includes Gear Multimedia v3.2 recording software, offering Windows users enhanced caching and extended memory management to support data transfer rates, including virtual image writing. The optimized directory and file structure will permit users to create 30-character directories and file names and logical formatting up to ISO level 3. Suggested retail price is \$1,389.

Contact Olympus Image Systems at 800/347-4027 or fax 315/844-5359.

ENGINEERING/ MANUFACTURING

RevPoint 3D System by SoftWorld

SoftWorld International has released the RevPoint 3D System, a three-dimensional digitizer and complete interactive CAD software package. The digitizer permits the entry of the X, Y, Z Cartesian coordinates of the surface of the object into the computer. The software then displays these coordinates as either interactive cursor movements or as components of CAD drawing objects as lines, circles, ellipses, arcs, splines, points, or positions. Upon completion, the CAD software will surface the defined object and present the data in a format to be machined. The RevPoint System provides an easy-to-use 3D digitizing system with all of the software needed for reverse engineering, rapid prototyping, 3D modeling or design. With the system, an as-built prototype or existing part can be treated as an existing drawing. The object can be exported in a variety of file formats.

Contact SoftWorld International 203/367-7789 or fax 203/367-8351.



Surfware's CD Multimedia Showcase

Surfware's CD Multimedia Showcase

Surfware's new CD-ROM Multimedia Showcase educates potential users about the capabilities of its recently introduced SURFCAM Version 6.0. The CD-ROM includes an overview of features common to all SURFCAM systems, extensive feature lists of each specific system and industry feedback with case study examples. It also includes playbacks, which allow the view to witness SURFCAM in real time. Minimum hardware required to run the CD-ROM is a 386 PC with 4MB of RAM running Windows 3.1 or later and a 2x speed CD-ROM

drive. A sound card and speakers are highly recommended to hear the demo's narration.

Contact 800/SURFCAM or fax 818/991-1980. The CD-ROM is free with a \$5 shipping and handling charge.

ForReview Lite

ForReview Lite is being offered in a stand-alone version and a network version. The raster view and markup product form Advanced Technology Center is a tool for conducting geographically dispersed concurrent engineering sessions or for sharing documentation and design information over networks or the Internet. Users can access a shared document through a network, mark it up and e-mail it to other users who have access to the same original document. The standalone version of ForReview Lite can be downloaded at no charge from a TC's home page at <http://www.atc.com>. The network version is priced at \$99.

Contact Advanced Technology Center at

714/583-9119 or fax 714/583-9213.

KREON System

A contactless 3D laser digitization system from KREON INDUSTRIE in France scans the surface of objects to enter their 3D geometry into CAD systems for reverse engineering and part replication. Application areas for the KREON system include part design, molding and tooling. The system employs laser projection sensors to sweep the surface the desired object at a rate of 6,000 to 15,000 points per second with a scanning resolution of 10 microns. It is integrated with a surface reconstruction software modeler that translates the digitized array of points into a z surface format that is readable by CAD systems. The KREON system also is compatible with three-axis NC and coordinate-measuring machines.

Contact KREON Industries Inc. at 810/650-9940 or fax 810/650-9939.

MISCELLANEOUS

Oce' Business Graphics Media

Oce' Imaging Supplies has introduced Oce' Business Graphics media, a line of specialty papers and transparencies with unique coatings that provide cleaner images and sharper graphics for professional business applications. Oce' Business Graphics media are 8 1/2 x 11 inches and 11 x 17 inches. The ink jet papers are specially coated to accept and hold ink better than traditional, non-coated bond paper media. Price for the business graphics media varies by type - ranging from \$9.85 for a 250-sheet box of monochrome ink jet bond paper to \$61.55 for a box of color copier transparencies.

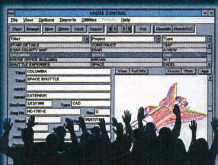
Contact Oce' Imaging Supplies at 800/323-4827.

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FLEX-IT: PARAMETRIC DESIGN AT ITS BEST

By M. Devere, MSEd.

When I saw the latest version of Flex-It, I had to remember to shut my gapping mouth. I couldn't help staring in amazement at the things this third-party software for CADKEY was doing. If only I had it back when ...

I've been in the furniture trade for almost 30 years, mostly in design work. I began in the pencil and eraser days when blueprints were blue! Back then, rationalizing design models was the biggest headache - expensive and time-consuming. One of my fondest dreams was getting a 3D CADD system. As supervisor for the wood trades in the Labor Ministry's technical courses, I pushed for getting CADKEY for these courses.

My lucky day came when I was introduced to CADKEY. I was able to produce a full set of production plans for the Ministry's wood updated training programs in record time. The big hassle was making the changes in details, such as resizing mortise and tenons, or changing the pitch for drill holes and doweling specs to match different machining systems or even the hardware itself! Sure it was easier - sure it was easier and redrawing. But you couldn't say in truth: "no muss, no fuss." Only the first part was right: No more messy, snudgy drawings. But the fuss! A good portion of my time was still spent at this later stage.

Now, with PiLON's Flex-It, redesign becomes a breeze. All you have to do is pick the element, enter a new value and the whole part redraws in proportion. The results aren't what you like? Just REDO and you're back where you started. Knowing there really is going to be "no muss, no fuss" encourages you to try out a broader range of changes. Load a pattern file and redesign by parameters. The idea that you can dedicate more time for quality design with ease is a powerful incentive to the imagination - and productivity.

The idea behind Flex-It was the development of a parametric design program. The PiLON Ltd. development team was responding to customer demands. Last year at the annual CADKEY users' conference, they gave us a peek at a preliminary version of Flex-It. I was so impressed I made it my business to be first to sign up as a Beta tester. At first, I was a bit hesitant, even timid, but soon found that making design changes was fast, clean and easy. During the past year, the program has been fleshed out and the wrinkles ironed out. Recently I was invited to examine at PiLON's completed version (now shipping) and get my copy.

It's an impressive fact that PiLON Technology Ltd. received development support funds from the Chief Scientist's office for its technology. Support of this kind is extended only to the very few, usually the tops in the field. The development team at PiLON must be way up there but you would never know it from their unassuming attitude. All have backgrounds in CADD design and programming and a variety of job expe-

riences in Israel's high-tech industries.

David Reburn of FastSURF says, "Flex-It is a new powerful CADKEY add-on module that does dimensional and geometric constraint management on existing 3D-wireframe models. It's completely 3D, and variational allowing underconstrained and handling under/over-dimensional models as any good variational solver would, but it goes way beyond that sort of thing and automatically recognizes 3D geometric features and shapes that are proportionally similar to one another. Very powerful stuff. It should catch on big in the CADKEY market for people doing 3D drafting/wireframe modeling and want to apply parametrics to their wire frame models."

Flex-It is loaded using a CADKEY-type installation program. If you installed CADKEY, you'll feel comfortable installing Flex-It. Flex-It sits inside CADKEY with full compatibility. You can even configure the menu interface to suit yourself. An enlightening on-line tutorial and well-illustrated handbook come in the package. The tutorial walks you through a part while demonstrating the many possibilities of working with Flex-It. If you want to redo the exercise or repeat a step, just click the arrow. If you have a 14- or 15-inch screen or have low resolution, the cursor may pick at the wrong arrow. On a small screen you just have to be more careful picking. The 17-inch screen I now have has solved that problem.

How does Flex-It make a model parametric? That's easy. Just pick an entities and Flex-It treats them as parameters. Then use PiLON's new dynamic Drag and Locate to place the 3D dimensions and start "flexing." Here are some of the Flex-It features that make life easier for the designer and modeler:

Automatic Context Recognition

Flex-It's automatic context recognition can sense arcs (it will put in an R) or circles (and put in a (symbol). You can then flip between the options of inside or line dimensions. If a line belongs to a filled shape, Flex-It measures the intersections of the entities that make this shape (just as it is done in regular drafting). If the line belongs to more than one plane, just flip between planes until you get to the plane you need. Angles are easily dimensioned by flipping between the different angular options. The dimensions use CADKEY's standards.

You can "flex" your model using parameters you insert from a sources and forms. These can be plain numeric values. You even can import them from an external file or put in expressions that comply with CADKEY's CALC and CADL by attaching them to CADL functions for multi-calculation and logical decisions.

Parametric Behavior

Parametric behavior with Flex-It can be Global or Local. With the Global setting, the parameter has global influence, for example orthogonally. The Local setting allows Flex-It to influence only the local geometric group. This can be defined as all the entities that connect to each other, including dimension entities.

What if you choose something that isn't what you want? Changing the parameters is quick and easy. Put in a new parameter or use the UNDO command to start at the very beginning or to step back to where things went astray. No more reloading the file and hoping you didn't lose something forever or start filling up your disk with "almost" duplicate PARTs. If you have many similar objects, a click on PRPTOTYPE and all of them will change according to the first element's parameter, even if they are part of a series with different sizes. If you pick SAME, it will change all elements that are the same to match the first one.

The parameters are invisible when you go to Layout mode, just as in CADKEY. You also can opt for them to be elements through the dialog boxes.

Automatic Constraint Recognition

Another powerful feature is the ability to redesign even when the drawing is under-dimensional. Flex-It does not need all the dimensions and tries to "understand" what you are attempting to do. It recognizes the elements and senses what the geometry is or what is referred to as geometric constraints. Usually it gets it right the first time. Though Flex-It doesn't need all the constraints, it still allows you to have good control over the flexing. I tried hard to push Flex-It to get a hang-up. When I did, it was on a fully constrained object. This, I'm told, isn't supposed to happen either. Using my part (not a widget, but still a peculiar one) they have already fixed that bug.

Symmetrical Parametric Flexing

You can use Flex-It's ability to recognize a centerline to enable symmetrical parametric flexing. This is one of the constraints that Flex-It can recognize automatically. When you choose centerline in the Flex-It Symmetry box, a change on one side will be affected on the other; in case of a conflict, it's up to you which way to go.

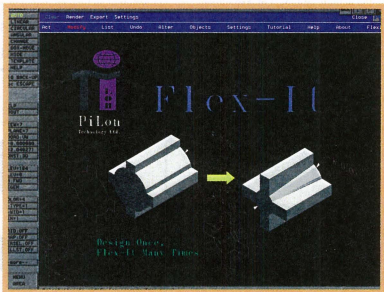
Try to change a circle or arc with tangents on Flex-It. You'll find that the connected lines, except they won't be tangents. In Flex-It, the tangents stick like glue to the arc and remain tangential, too! This is also true on a 3D model. Given a series of similar objects, such as tenons or drill holes, you only need to flex on one and all the others follow suit! If the results aren't up to

scratch, just click Undo and try again. Trying to BX.MOVE as an alternative, all those objects can bring you to tears. I know, I've been there!

Another Flex-It property I found very useful was moving an object by changing the parameter. The related objects accommodate the change and you have redesigned the entire model. An X-FORM in CADKEY is definitely going to leave everything behind for you to re-connect, re-do or whatever.

Prototyping and Templates

You can now use any drawing as a template by using the Prototype func-



PiLON's Flex-It

tion. You can reproduce new versions in the shortest time with the assurance that the end product is up to par or better! Sure, without Flex-It you can use BX.MOVE, but you have to compute the delta and if you're wrong you get to do it all over again. With Flex-It, a change is made in three clicks. Not what you wanted? Another click and you are back where you started.

Works On Old Models/Imported Drawings

You can re-model your old geometry (even very old ones) or import one from a different platform. Flex-It also makes it possible to take a sketch or even a vectorized scanned drawing and turn it into a CADKEY-recognized one. The program reads and recognizes the relationships between the elements and will, for example, take a sketch of a rectangle, even if the elements are disconnected and not "squared-up," and redraw it correctly. It's almost uncanny!

What about DWG or DXF files? It used to be that after you imported one, you still had a long and tedious process to reconnect elements and erase orphans. Sometimes you may have thought it would be easier to draw it all over again. Flex-It takes a DXF or DWG and gives you a drawing that is ready for you to take further. This is done through Flex-It's pre-processor. This feature also is extremely helpful if you want to use Picture-It to see what your model looks like. Remember having to look for and clean up disconnected elements, duplicates, segmented lines and orphans before Picture-It would work? Now, it's easy. Flex-It's pre-processor does it for you.

There is also a good side effect to

Hints from CADKEY users

Printing to a Non-Supported Printer

If you use the DOS version of CADKEY and want to buy/have bought a printer that CADKEY has not yet/will never support with a driver, all is not completely lost if you also have the Windows version of CADKEY. Almost all printer companies provide drivers for Windows. Free.

While we know work with 3D assemblies are painfully aware that the Windows version of CADKEY is not yet robust enough for serious effort in this area, one can orient one's file in the DOS version, save the file, enter the Windows version, load the file and print. A little clumsy, but hey, it works!

When you set up to print in the Windows version, make sure you indicate that you are printing in black and white (unless you have a color printer). If you don't, the program will spend an unconscious amount of time dithering the colors, and if it's a wireframe, all your lines will be dashed. Funny-looking to say the least.

The defaults are apparently color and two copies. Makes sense. Most people have color printers and want two copies of every-

thing. Well, don't they?

Larry Mالدrelli, editor of CALCAD, newsletter of the Southern California CADKEY Users Group

User Group Provides Logarithm Solution

If you are one of the under-30 crowd, you probably think "Logarithm" is the name of a New Age music and rhythm group. This is not correct, although the name would make more sense than "Mannheim Steamroller." A logarithm is an arithmetic tool that was widely used to multiply numbers before electronic calculators became so common. It also was the basis for the slide rule scale and for the abscissa used to plot exponential numbers.

Recently, I needed a scale like the one shown at the right to build a Nomogram.

I tried the Harvard Graphics program, but all it had was a logarithmic chart, not the scale I needed. The CADKEY index does not even mention logarithm. Jim Moscherosh told me he made a logarithmic scale by measuring the engraving on a slide rule scale and transferring this information to a CADKEY drawing. Bob Messner thought that a simple looping program created as a CDE (Cadkey Dynamic Extension) would do the trick.

But the answer turned out to be simpler than either of the above and also shows the value of the CALCAD user group.

I took my problem to a meeting and a fellow member, Ray Farrar, came up with the following solution:

Draw a horizontal line on the screen. This will be the "1" on the scale. Then use CREATE: LINE: PARALLEL: AT: DIST: when the prompt line asks for a distance, Type in LOG(n) where "n" is the number 2, then 3 and so forth to the number 10. Spacing from 10 to 100 is a repeat of the spacing from 1 to 10. One at a time you make the lines of the chart. The interesting thing

about the AT DIST statement is that any argument or formula that the calculator can use that results in a value can be used for the distance.

The LOG(n) gives the "natural" logarithm. You also can get common or base 10 logarithms by typing LOG10(n).

Another one of the powers of CADKEY allows you to convert a logarithmic scale to a different base. For example, to convert a common logarithm scale to a "natural" you use XFORM: SCALE: UNDIR: MOVE: Then select your logarithmic scale, scaling origin, direction and scaling factor (in this case, 2.3026) and you have the new "natural" scale. This feature allowed me to generate different base scales for different values in my Nomogram. Before the days of computers this would have been a tedious process with pencil and ruler.

When all was said and done, this project, which blended the old and new technologies, turned out to be a rewarding challenge.

Ed Manes is an active member of Southern California CADKEY Users Group and a columnist for its newsletter, CALCAD.



'Paperless office' reveals hidden paper, hidden costs

By David Wilson

The benefits of electronic document management have been proven time after time. So where's all the paper coming from?

Even with the proliferation of CAD as a proven design and maintenance tool, manually produced drawings still represent a huge percentage of information generated and maintained by companies. In fact, of the more than eight billion drawings worldwide, fewer than 15 percent are in a CAD format, according to estimate by International Data Corp. and Document Management magazine. Where, then, does all the paper in today's "paperless office" come from?

Three Hiding Places

Typically, you'll find vast quantities of paper in three areas: the archive, the revised drawing, and the contractor.

Although archive material may be needed only for reference or for legal purposes, it is still representative of most information and is highly valuable to the company that created it.

Revision drawings represent a company's active changes or work in progress. These are typically the result of engineering change orders, engineering change notices, or as-built designs. Newer designs are usually modified within the design environment of CAD, but older drawings often are still modified on paper.

And, even if you are fully modernized with a full suite of CAD software, your contractors, subcontractors and business partners can slow you down with their own paper problems.

The Cost

Paper drawings, mylar, blueprints, and other media are susceptible to aging and damage,

and replacement costs tend to be high. In addition, facilities costs for the storage and maintenance of paper archives can be substantial. Implementing an EDM system often can be justified based on reductions in facility costs alone.

And it is estimated that 3-7 percent of technical assets are lost or misfiled using manual procedures for handling paper drawings.

Finally, companies that depend on paper-based documentation systems risk nonconformance with government regulations and industry standards. For example, OSHA 1910 regulations are driving companies to improve the management of their document control processes. And according to the British Standards Institute, 47 percent of ISO certification failure is due to poor document control.

But through the implementation of a managed engineering archive, searching time, as well as re-engineering time for lost drawings, becomes history. And that translates into savings you can see.

David Wilson is principal of Open Archive Systems, which specializes in paper-enabling consulting services and products for companies implementing document management and raster/CAD systems. Wilson can be reached at 603-890-5314 or fax 603-890-5342. Address: Open Archive Systems, 5 Jefferson Rd., Windham, NH 03087.

FLEX-IT from Page 10

this. Your files are going to be leaner since all the unneeded elements you didn't see have been eliminated.

Object Masking

An important tool in Flex-It is Object Mask. This allows you to have more control over how the design is separated into objects and which entities are processed (flected). The Object Mask is similar to Picture-It's Object Recognition Mask. This is useful when objects are coinciding and you want to change one of them. Changing the color, line thickness, pen number or moving the object to another level allows for the masking to act as if that object won't be flected. The mask also can be applied to selected entities through the Selection List Mask. One of the benefits of masking is that rendering will work faster.

And Some More...

There are a few more goodies that the guys at P/Lon have salted this humdinger of a product with:

The interface is user-definable. You can have a toolbar on the top or bottom, or a CADKEY menu. Parameters can come from word-processed tables, program-generated variables or mixed mathematical formulae to load in the constraints.

Flex-It allows you to use a parameter as a note for you. It will have a different color (or also configurable). For example, you don't have to key Escape/Control/Verify/Dist. Just pick Modify, pick the element and then pick the radio button in Update for Reference. Click OK and the element's

parameter is noted. At any time, you can change it to be active.

If a parameter must remain static or "frozen," just pick Freeze and Flex-It will flex the object but hold your frozen parameter even if it creates a conflict. If a conflict arises, the element's parameter is painted a different color. You then tell Flex-It which way you want to go. If Flex-It cannot flex it, a pop-up menu-cmd-dialog box allows you to see specifically where the problem is, while the offending parameter flashes away. The Flex-It dialog box gives you a list and a description of the problem elements and even suggests how to overcome them.

I could tell you more, but that's not the same as seeing Flex-It in action. Flex-It definitely will put turbo-charging into your design work! For me it has definitely made CAD work in the way I dreamt it could be.

Flex-It is available from authorized dealers in both DOS and Windows. Suggested retail price is \$795, but for a limited time it is available for \$500.

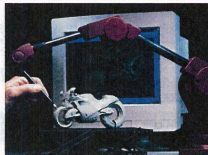
For information, contact P/Lon Technology Ltd., 10 Hahabek St., Kfar Sbarbaria 46910, Israel; phone (+972) 5 509528, fax (+972) 5 504892, CompaServe 100274.1073 or e-mail 100274.1073@compuserve.com

M. Desere is a furniture designer and educator. He now heads MarsDraw Ltd. in Jerusalem, Israel, a firm that specializes in developing new methods in on-line training manuals for CADD students. He can be contacted at MarsDraw Ltd., PO Box 71100, 8 Keren Kayemet Road, Jerusalem 91090, Israel.

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LESSON TWO – PILLOW BLOCKS & SHAFT

Dr. Walt's CADKEY Cookbook is a real treasure out there in cyberspace. It can be found in the educational section of Cadkey's home page <http://www.cadkey.com>. It contains several exercises on solid modeling and rendering techniques in CADKEY.

The available Cookbook Files currently cover the following: sheet metal cases; pillow blocks and shafts; plastic cases with draft angles; diesel – exploded assembly; packaging design; rapid prototyping; creating polygon and .sla files; creating solid sections; solids using spatial construction grids; using the project skewer function; and simple mechanisms. Chapter 2– Pillow Blocks and Shafts is presented here to whet your appetite and encourage you to get on line.

By Walt Silva

Modeling complex objects is simple once you master a few simple rules. To illustrate some of the basic principles, this exercise takes you through the major steps used in construction of the pillow block bearings and shaft pictured above. The exercise assumes you know the basic functions in CADKEY, and concentrates on the methodology instead of the tools needed for each construction step. Our purpose is to start you in the right direction. First, remember the following rules:

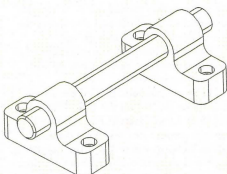


Figure 1

Basic Rules

- Separate a complex object into component features. Process these as independent objects by placing each group of entities on a different level and masking in Picture-It settings by level.

- Carefully establish a construction plane by selecting intersecting lines or an existing planar entity, like a circle, prior to constructing geometries in three-dimensional space.

- Check each stage of construction by processing in Picture-It as you finish that step. Don't wait until your model is completely built to discover modeling flaws that prevent successful rendering!

- Until you are thoroughly familiar with the effect of switching the various construction settings, leave Construction 2D/3D mode at 3D, VW/WLMD mode at VW, View axis indicators-construction view on, and Active level set at 1. Build on level 1 and move geometries to level 10, 11, etc.

The CADKEY techniques and functions you need to know how to use to complete this exercise are:

- Extruding a profile using XFORM /DELTA /JOIN
- Creating Fillets on a three dimensional object
- Rendering an object using Picture-It
- Establishing a construction plane on a surface of an existing model
- Using XFORM /PROJECT /NORMAL /JOIN to extrude a profile to a specific plane
- Duplicating a three-dimensional object
- Creating a mating part to an existing part in three dimensions.

BUILDING THE MODEL

Step One

Build a profile of the major cross section in view 2

CADKEY TIP: Always construct all fillets and rounds that form a profile prior to using XFORM /DELTA /JOIN to extrude the geometry. This reduces construction time considerably and increases accuracy since all of the tiebars that are necessary to define the three-dimensional object are automatically created during the extrusion process.

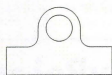


Figure 2

Step Two

Use XFORM /DELTA /JOIN to extrude the basic shape of the object. Move all entities to level 10. Process the object in Picture-It to verify model integrity. In Picture-It settings, mask on Level only and set segmentation at 8.

CADKEY TIP: The Picture-It dialog box allows you to select the segmentation value for arcs prior to producing a render-

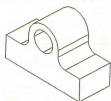


Figure 3

ing. Use low values (typically 8-10) during initial modeling to increase speed and reduce memory requirements. For a final rendering, the segmentation value can be increased for smoother curves.

Step Three

Create fillets on the top and bottom corners of both ends of the

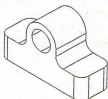


Figure 4

block. Use XFORM /OLD-NEW /COPY and select one of the original vertical corners (now orphans), select the top end of the line for OLD POSITION using ENDDT, hit return, and click on the endpoints of each of the newly created fillets (top surface only), to form the new tiebars.

CADKEY TIP: Creative use of the XFORM /OLD-NEW command can substantially reduce modeling time. Notice the number of picks that are saved by using this technique instead of creating each line segment ENDDT to ENDDNT.

Step Four

Set the construction plane on the surface shown by clicking on VIEW, DEFINE CONSTRUCTION VIEW, ENTITY, then cursor select one of the top fillets. Then construct the circles that define the top diameter of the counterbores. Use XFORM /DELTA /JOIN, single select the two holes, and extrude them to the desired depth. Then establish a new construction plane by clicking on one of the newly created lower circles that defines the bottom of one of the counterbores. (Create a circle concentric to each of these bottom counterbore circles that is the diameter of the desired through hole. Now use XFORM /PROJECT /NORMAL /JOIN to extrude these two geometries to the lower surface of the pillow block.



Figure 5

CADKEY TIP: Simplify construction of progressively stacked geometries such as counterbores by using XFORM /DELTA /JOIN and XFORM /PROJECT /NORMAL /JOIN as shown. The delta option allows you to accurately extrude the counterbore to a specific depth. The project option then guarantees that the through hole will end exactly on the other surface of the part. Using the delta option for the through hole can result in an inaccurate model if the depth entered is not the exact distance from the bottom of the counterbore to the opposite surface.

Step Five

Establish a new construction plane on the front face of the pillow block using the front bore circle. Use XFORM /DELTA /COPY to produce a second copy of the pillowblock in line with the first. (Use X=0, Y=0, Z= desired distance). Change all the entities to cyan (5), and move all of the entities to level 10. Process a rendering in Picture-It by masking on Level only and setting segmentation at 8.

CADKEY TIP: Always keep the Picture-It toolbar active during modeling work. The convenience afforded by this powerful, integrated rendering tool provides you with the ability to quickly check your model at each stage of construction and also to quickly see a preview of your finished part.

Step Six

Change the active color to red (2). Establish a construction plane on the front face of the nearest pillowblock using the front bore circle. Create a circle concentric with the borehole circle, with a diameter .003 less than the borehole circle. Use XFORM /PROJECT /NORMAL /JOIN to extrude this circle to the rear face of the second pillowblock by selecting the borehole circle on the rear face of that pillow block to identify the plane to which the geometry must be projected. A quick process in Picture-It confirms your construction.

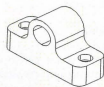


Figure 6

CADKEY TIP: Methodically building geometry and moving it to specific levels organizes your model and simplifies processing in Picture-It. When parts share common surfaces, it is essential that they be placed on different levels and that Level masking be selected in the Picture-IT dialog box. In this intermediate step, since the shaft has a clearance of .0015 inches from the side of the hole wall, processing will not be affected. In addition, since the blocks were previously moved to level 10, and the current active level is one, the geometries are actually grouped on different levels!

Step Seven

Change to view 1. Using EDIT BOX-MOVE, and masking on red, drag each end of the shaft .5 inches past the face of the respective pillowblock. (For the lower end on the screen, surround all of the geometry of the shaft at the lower end of the screen, and use X=0, Y= -5, Z=0. Remember that EDIT BOX-MOVE is a planar, drawing view command.) Repeat with a Y value of +.5 for the end of the shaft at the top of the screen. Change to view seven to display the results. Now form the chamfered ends of the shaft by constructing the smaller concentric circles on the shaft end planes, using XFORM /DELTA /MOVE to move the newly formed circles of the ends, and using CREATE /LINE /ENDPTS /ENDENT to create the tiebars.



Figure 7

HELMET from Page 1

types) were produced and tested by hockey players on the ice. The six hand-trimmed prototypes created from wood patterns provided valuable feedback on features, performance and potential problems. These prototypes provided other productivity ideas. Isabelle says, "CAD/CAM could have been used at this point to accurately machine thermoforming molds and trim the prototypes. The prototypes would have been more accurate, more economical and available to test faster."

With the preliminaries out of the way, the team proceeded to detailed design with CADKEY and FastSURF. The details were resolved accurately in 3D. To save time, disk space and gain speed and productivity, only half models were constructed since most of the parts were symmetrical. Filleting was omitted to save time. Draft angles were determined accurately and tool design problems were worked out with the various toolmakers from Canada, the U.S. and Taiwan.

At this point, 3D modeling really came

into its own. For example, critical dimensions, such as vent dimensions were checked in 3D. A virtual hockey stick blade was probed into each opening of the 3D model to verify compliance with standards. This allowed the largest vents possible. In addition, the CSA standard head form was laser scanned. Then a virtual head form was easily produced using CADKEY and FastSURF. The virtual head form made it possible to easily check accurate visor-to-face clearance, chin cup alignment, jaw articulation, and positioning for optimal eyesight.

After this data was incorporated into the design, accurate cross sections were developed from the CAD 3D model for the construction of the second-run prototyping models (vacuum formed) and on-ice testing. Again, CAD/CAM rapid prototyping would have streamlined this process and been more accurate.

The final design involved extensive 3D surface design using CADKEY and FastSURF. All parts were surfaced down to the

finest detail, including draft angles, filtering and blend areas to obtain accurate data for stereolithography (SLA) prototypes. This became another "next time" learning step. In CAD/CAM rapid prototyping and toolmaking, most radii are determined by the cutter and much work is eliminated.

The Pre-Production Phase

First, stereolithography models were used for final dimensional verification and to validate the integrity, accuracy and assembly of all parts. Then, final touches were made to the 3D models. "In the pre-production and production stages the files functioned very well. The FastSURF IGES files read easily into CAD/CAM packages such as SurfCAM, Mastercam, Cimatron and CAMAX. The CADKEY and FastSURF STL files also were easy to work with," said Isabelle.

Next, the 3D IGES surface files were sent to the mold makers. The communication was paperless with the exception of summary reference drawings showing overall dimensions,

preferred gating locations, plastic weld lines critical to the impacted area, and a few critical fit and function dimensions. The part molds were given to three different mold makers, using three different CAD/CAM systems.

The molds were ready faster than in projects before. GID used CADKEY and FastSURF and all the parts fit together perfectly.

Impact certification followed. Physical tests were performed on molded visors to assure that they met the 63-mph impact standard. FEA impact simulation was also used to accurately verify proposed correction for compliance.

The experience, the learning process and the superior results realized with the hockey visor project has made GID enthusiastic proponents of CADKEY and FastSURF. Isabelle states "The software was easy to learn and intuitive. It gave us an unbelievable bang for our buck compared to other packages."

"They are definitely up to speed and "raring to go" with the projects now coming their way."

REMOTE from Page 5

than simply accessing the network database resources. This again shows the benefit of combining remote node and remote control technologies to form an effective remote access strategy.

An Operating System Bridge

Organizations making the transition from Windows 3.x to Windows 95 will, at some point, be faced with a mix of operating systems that are present on both the network and individual workstations. A user's laptop may not be able to support the Windows 95 hardware requirements while his or her desktop works perfectly. Or the situation could be reversed when a user decides to upgrade a home machine, which is used partially for work, to Windows 95 while his or her office desktop continues to run Windows 3.1. In these cases, a LapLink to LapLink connection may be required. LapLink allows Windows 3.1 to Windows 95 connections. A road warrior with a Windows 3.1 laptop can dial into a Windows 95 desktop and take full advantage of any installed 32-bit applications as well as transfer files between the two machines.

Security

While ease of use and reliability are among the highest concerns, security may be the paramount issue of IT and MIS administrators. Remote nodes, as implemented in Windows 95, provides either user-level or share-level security. For the easiest administration, user-level security is set at the server and passes login requests to the file server, simplifying security management.

In LapLink, security is managed at the server with a login list managed separately. A hybrid connection can create effective barriers by first requiring a remote user to provide a network login name, and then only making a remote control connection if the network workstation also allows

the connection.

Hardware solutions, including SecureID[®] from Security Dynamics[®], take the burden of security enforcement from the software to the hardware.

Conclusions

The mass adoption of Windows 95 brings remote node technology to the forefront of remote access technology. As described above, there are limitations, like speed, that will keep remote nodes from being a complete remote access solution. Even so, remote node technology is here to stay. Remote control technology, already entrenched in the remote access market, also is here to stay and will always be used to some degree. Until we are able to use truly broad band interfaces such as ATM and Sonet technologies for localized transmis-

sions, the application needs for remote control still exist. This is based on the fact that running a network connection that is even half the speed of a true office connection will still make many applications grind to a halt.

Today, a single product that smoothly integrates both techniques is not yet available. With that in mind and given each technology's pros and cons, users will most likely benefit the most from a product mix that provides both methods of access. One such combination is the remote node provided in Windows 95 and LapLink for Windows' remote control package. This complete solution provides users and IS with a affordable, reliable and easy-to-use combination.

This article was based on a White Paper on remote access computing released in 1995 by Traveling Software Inc. of Bothell, Wash.

SILVA from Page 12

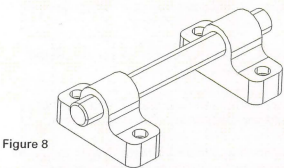


Figure 8

Step Eight

Move all of the red entities that describe the shaft and its chamfered ends to level 11. Finally process the model in Picture-It for a finished rendering!

A BSME graduate of Stevens Institute of Technology, Walter Silva has spent the past 27 years building engineering departments and the teams that run them. Formerly Director of Engineering & New Product Development at Industrial Devices Inc., he is currently president of Conceptual Product Development Inc., a design consultant and an expert CADKEY trainer. He is also an author of several books on applying CADKEY to product development.

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Getting from Here to There on the INFORMATION SUPERHIGHWAY

What is the Internet?

Technically, the Internet is the world's largest collection of decentralized computer networks. More than 50,000 computer networks connect more than 5 million computers using the high-speed TCP/IP telecommunications protocol. Through the Internet, between 20 and 50 million people in more than 150 countries send and receive e-mail, engage in thousands of discussion groups, conduct research and development projects and use a wide array of public and private information services. The Internet is the fastest growing telecommunications network, with a growth rate of nearly 15 percent per month as of early 1995.

Until very recently, the Internet was not open to commercial activity. Now, the transition of the Internet from a global research network to a general-purpose global network is opening up tremendous opportunities. According to the New York Times, the Internet is the "New Information Mass Market." Rupert Murdoch's recent acquisition of an Internet access provider has lent substantial legitimacy to the Internet as a commercial network. Continental Cablevision's announcement that it plans to offer Internet connectivity directly to cable TV subscribers further legitimizes the claim that the Internet is the Information Highway.

The Internet is a unique communications tool because it is a two-way medium. It gives users the ability to respond, select information services or contact suppliers of goods and services immediately. The Internet will succeed where other mass marketing information systems have failed because access to it is ubiquitous and well-defined.

Who manages the Internet?

The Internet is not managed by any one group. It is a decentralized collection of different networks, each managed by separate groups who have agreed on a common set of internetwork telecommunications protocols to link their networks to one another. Countries throughout the world have one or more backbone public networks which are connected to each other across the globe. The nonprofit Internet Society is primarily responsible for resolving internetwork problems and conducting internetwork research. The internetwork telecommunications protocols, TCP/IP, for example, are specified by the Internet Engineering Task Force (IETF), which is part of the Internet Society.

Who uses the Internet?

Initially, the Internet was populated by college students, academicians, and government researchers. Today, more than 50 percent of the sites on the Internet are for commercial use. Increasing numbers of people are now accessing the Internet for entertainment and general information purposes. People in other capacities, such as management and marketing, are discovering the value of an Internet connection. Children in grades K through 12 are using the Internet in significant numbers.

There's no one demographic, like "students and academic," that describes Internet users. People around the world who have the means to connect and the need to interact with geographically dispersed groups use the Internet.

See INTERNET, page 16 ⇨

A GLOSSARY OF INTERNET TERMS

CompuServe's Network CompuServe is a RAMP-compliant service provider that provides local Internet access through more than 400 points of presence (POPs) worldwide. CompuServe provides the phone connection to the Internet that remote dial-up (modem) users require.

Dial-on-Demand Dialer Dial-on-Demand Dialer is a program that allows the user to dial an Internet service provider just by double-clicking an application icon requiring that connection.

File Transfer Protocol FTP is a UNIX language protocol that allows files to be transferred over the Internet.

Gopher Allows a user to perform subject and key word searches on databases all over the world. Gopher allows information on server computers to be read without copying to the remote client.

Hotlist A Hotlist is a group of important or "hot" World Wide Web (WWW) addresses that can be saved by subject name and accessed easily by double-clicking on the subject icon. Adding an address to a Hotlist means that a user does not have to constantly remember address strings like: <http://www.spry.com/ibox/upgradingibox.html>

Hyper Text Transfer Protocol HTTP is the language used by the WWW to communicate over TCP/IP. All addresses on the WWW begin with the prompt <http://>.

Icon An icon is a graphical symbol used to represent information on a computer. When the icon is double-clicked, the information is accessed.

Internet The Internet is a "network of networks" that serves as the umbrella term for the millions of computers connected over the world via TCP/IP. The WWW is part of the Internet.

Mosaic Mosaic is a graphical browser that acts as a front end to the WWW. Mosaic was developed in 1993 at the National Center for Supercomputing Applications. Originally a shareware application, Mosaic has been licensed to private companies and developed into a commercial product. It is believed that Mosaic is on more than 2 million desktops worldwide.

Network File Manager™ Network File Manager is a combination of Windows File Manager and FTP. Network File Manager allows users to search and retrieve information off FTP servers around the world as if they were searching and retrieving off their own hard drive. With Network File Manager, doing a file transfer using FTP is as easy as dragging and dropping icons.

Newsgroup A Newsgroup is a forum used by people on the Internet to exchange ideas, ask questions, or inform others about current or past events. Newsgroups are distinguished by subject.

Point-to-Point Protocol PPP lets a computer connect to the Internet with a modem via TCP/IP over a phone line.

Remote Account Maintenance Protocol™ RAMP is a method devised by SPRY™ that allows a user to configure their software and manage the complexities of TCP/IP automatically. With RAMP, the computers do the talking, and the user is shielded from the complexities of the underlying technology.

Serial Line Interface Protocol SLIP lets a computer connect to the Internet with a modem via TCP/IP over a phone line.

Server A server is a computer with a large amount of memory that "serves" as a repository of data for other computers attached to it.

Telnet A character-based system that allows a remote user to log on to a computer system and appear to be just another computer on that system.

Transmission Control Protocol/Internet Protocol TCP/IP is a protocol developed in the early '70s that allows computers to share information regardless of platform. In this way, DOS machines can communicate with UNIX and Macintosh machines as if they were peers.

World Wide Web The WWW is a hypertext system originally designed for the exchange of information among physicists at the CERN laboratory in Geneva. The WWW allows for the exchange of images, voice, and text between millions of computers around the world.

Hot Web Sites for CAD

Straight From the Horse's Mouth

WinNews, published by Microsoft on the first and third Monday of each month, covers a variety of topics related to Windows 95 and other Microsoft products. To subscribe, send Internet e-mail to: enews9@microsoft.winnet.com from the account with which you want to subscribe. The subject line should be blank. The body of message should only have as text: **SUBSCRIBE WINNEWS**. Articles in a typical issue in January covered the NTL, NBC Sports and Microsoft Launch Super Bowl Web Site, information on release of a Microsoft Games For Windows 95 CD, Microsoft's support for the IEEE 1394 Bus Interface Standard, and a list of updated European phone numbers for Technet. Microsoft's Product Support provides two regular features: Windows 95 hints and tips and Answers to Frequently Asked Questions about Windows 95.

Film Downloading

Seattle FilmWorks recently began a new service called Pictures on Disk, which offers film processing delivery via floppy or the Internet. By adding \$3.95 to the cost of developing 24-exposure film, you can get digital delivery in the U.S. For Internet delivery, the customer gets an e-mail with instructions on how to download their completed images by logging onto the Seattle FilmWorks web site at <http://www.filmworks.com>. Seattle FilmWorks states that users of 28,800 baud modems are able to download 24 or 36 photographs is 7 to 8 minutes. They also have free software for customers: PhotoWorks for viewing Picture on Disk Images and PhotoMail for downloading their images from the Internet. For more information, log on or phone 800/445-3348.

Internet Mania from Corel

Internet Mania, the first productivity title in the Corel CD HOME series, is a collection of utilities for anyone who has Internet access. It is priced at \$24.95. It includes Web Page Update Notifier, 40,000 listings from the Lycos Web Search, the largest catalogue of the World Wide Web pages; Web Catalog, another front end for the Lycos database with a hierarchy of topics similar to the format in the Yellow Pages; NewsScan which acts as a filter to search through news groups that you define and builds a list of messages that satisfy your criteria; and Corel FTP, a program for Windows 95 that works like a traditional graphical FTP client and provides non-frustrating access to busy FTP sites. It also includes Home Page Author, an easy step-by-step way to create Web pages without knowledge of HTML and how the Web works, and QuoteScan, a personal stock ticker that allows the user to track the prices of five company stocks. Contact Tim Magwood at tim@corel.ca.

More Stuff from Corel

Corel has a CMX Plug-In Viewer for Netscape's web browser, Navigator 2.0, that makes it possible for Internet users to view CorelDRAW CMX files (vector format) on the World Wide Web, as opposed to the traditional GIF of JPEG files (raster format) that currently are associated with Internet use. It is a self-extracting .exe file and is available for downloading from Corel's Home Page at <http://www.corel.com/corelsm/>.

Techno-Isel

A new Techno-Isel Web site consists of 15 linked home pages featuring wood industry applications for their line of 89 different CNC wood routers. One of the feature articles that can be read or printed is "10 Tips to Know Before Buying a CNC Router." <http://www.technoisdies.com>.

On-Line CAD Info

The following was discovered in the Computer-Aided Engineering magazine CAENET at <http://www.penton.com/cae/> - a particularly good Web site.

Peter Nurkse, CAD engineer in Corporate MCAD Support at Sun Microsystems Computer Co., passed along some information on MCAD newsgroups he had received from Dan McKenney, International TechnoGroup Inc. McKenney updated the list "Usenet" groups and placed it on CAENET. Usenet is a distributed conferencing and discussion system that enables engineers to access information on CAD/CAM. It's available on a variety of computer systems and networks, but the bulk is transported either over the Internet or Unix-to-Unix Copy. For more information about Usenet, see <http://www.cis.ohio-state.edu/~peteret/faj/usenet/usenet-faj/part1/faj.html>.

Newsgroups related to the areas of CAD/CAM/CAE and other engineering issues include the following, but there are

many others.

alt.cad
Computer Aided Design.

alt.cad.autocad
CAD as practiced by customers of Autodesk.

alt.cad.cadkey
CADKEY, DataCAD, and other Cadkey Inc. products.

comp.cad.synthesis
Research/production in the field of logic synthesis.

comp.graphics.apps.avs
The Application Visualization System.

comp.graphics.apps.wavefront
CG software from Wavefront.

comp.graphics.apps.alias
CG software from Alias Research.

comp.graphics.apps.lightwave
CG software from Newtek.

comp.graphics.visualization
Scientific/data visualization.

comp.periphs.printers
Information on printers.

comp.robotics
All aspects of robotics and applications.

rec.crafts.metalsworking
All aspects of working with metal.

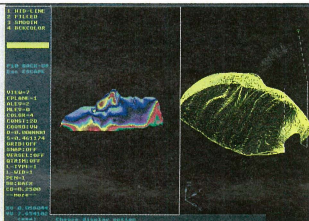
sci.engr
Technical discussions on engineering tasks.

sci.engr.manufacturing
Manufacturing technology.

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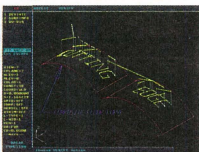


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- CADKEY IGES capabilities

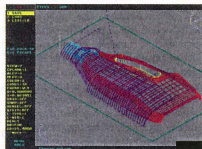


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Have you got the system resources blues?

By Elton Cole

Systems resources can be a problem in Windows version 3.1, especially if you use resource intensive programs like CAD and graphics. I would like explain some of the differences between Windows NT@ V3.X, Windows 3.11 and Windows 95 in the area of memory management and system resources.

System resources?

A brief description of system resources in Windows 3.x and 95 may be beneficial here. The system resources are small files that keep track of your Program Manager configuration, program groups, icons, menus, toolbars, and initialization information for the system.

Technically, the system resources are control or access files. These files keep track of all of the Program Manager and application items mentioned in the previous paragraph. To understand this, it may be helpful to envision a fleet of automobiles sitting idle on a parking lot. I may own thousands of cars, but I can only drive off in a car for which I have keys. If I stuff my pockets full, I may be able to start a few hundred cars, but many are still inaccessible to me. This is the reason that adding RAM doesn't reduce resource limitations — sure, you can buy a dozen more cars, but you can still carry only so many keys.

So, how does it all work? These files are relatively small. When the files are full, the user experiences, at best, erratic performance, minor application errors, and disappearing menus or toolbars. At worst, the user may experience hung applications or an unstable system. If this sounds familiar, read on.

You also need to know about "errant" applications — naughty Windows applications

that do not release system memory correctly upon termination. Stated simply, your flow-chart program may not vacate the RAM address it occupied when you closed the application.

What does this actually mean? Suppose you buy a new house. All the paperwork and details are completed and you arrive full of domestic joy and ready to move into your new dwelling. Surprise! The previous owners are still there. Even worse, they refuse to leave! And it gets worse. The local police department states that the nefarious occupant has some type of legal immunity and cannot be ousted from your house.

How does this work inside a PC? Programs use addresses in memory. The addresses are more like OXFFFF than of #12 Downing St., but the logic is the same. Only one application can use a specific address; trying to use an occupied address will result in errors.

Why does this even happen? Because some programmers were sloppy with their code. Program A may be running fine at address 12AB. When this program closes, the Windows environment assumes that 12AB is now vacant. Unfortunately, this is not always the case. Programs do often leave vestiges of code or data in what should be a vacant memory address, providing the dreaded GPF (General Protection Fault) message. Most programs written lately are civilized in behavior, but many "misbehaving" applications still exist.

Partial (stop-gap) Solutions

There are things you can do to alleviate the system resource problems encountered in Windows 3.1.

- Shut down all applications running under Windows except Program Manager and your CAD program. This may not help enough in situations where resident network drivers cannot be removed easily. Unfortunately, it may mean you cannot run other applications at the same time as CAD (such as Word or Excel), which can be a major inconvenience.

- Install RAM doubling software.

- Close and then reopen Windows. Open a new session with only Program Manager and the needed application running. It may be necessary to remove program icons from the STARTUP group or edit the win.ini file (check with your IS staff before editing any system file) to remove program invoked via the LOAD or RUNlines.

- Remove extraneous program groups from Program Manager. Many application installation routines create a new Program Manager group for the newly installed program. Often, similar programs can be placed into the same group to reduce screen clutter and enhance efficiency. For example, do you really need an exclusive program group for the new printer driver installed on your PC? Probably not; consider consolidating similar program or utility icons. I group all of my communication, terminal emulation, and e-mail applications into a single Communications group. Likewise, my most-needed programs are in a single group labeled Daily. You can typically reduce your screen clutter dramatically.

RAM Doublers

Be aware that some of these products don't actually do anything. However, other products do function as promised. These

products use a technique called compression to effectively increase the amount of memory available. This compression does provide more system resources for the user. These products do not always allow the user to open more programs, but the ability to open multiple spreadsheet or CAD files does increase productivity.

Does Windows 95 need RAM compression? Probably not. While there are inherent system resource limitations in the Windows 95 architecture, most users will not encounter them. Try this: Load the MS Office® suite in the Windows 3.X environment. Attempt to load each component of the suite. Having trouble loading a Powerpoint® file? If so, you just hit the "system resource brick wall." Now, try this with MS Office® for the Windows 95® operating system. Much better, yes?

The Ultimate Solution

The best permanent solution to the "System Resources Blues" is to upgrade your operating system to Windows NT 3.51 or Windows 95. NT has no system resource limitations. The architecture of NT is fundamentally different from Windows V3.X or Windows 95. You can verify this by choosing About Program Manager from the HELP menu on an NT-equipped machine. System resources are not listed.

The memory architecture of NT is closer to UNIX or VMS than to the DOS® Windows 3.X or Windows 95® models. The developers of NT were well aware of resource limitation problems when they began to write their new operating system.

Elton Cole is with Paulo Products Company in St. Louis, Mo.

CADKEY Training in the U.S. and Canada

Here's a list of resources for CADKEY Training in the U.S. and Canada. You may contact any of the people to inquire about specific locations, dates and pricing information. This symbol * signifies Cadkey Authorized Support Centers.

ALABAMA
University of Alabama - Gadsden
Ted Bradshaw - 205/647-5782
ARKANSAS
Arkansas Community - Jonesboro
Charles Coleman - 501/872-2088

CALIFORNIA
Butte College - Oroville
Mike Woods - 916/895-2388
CAD Graphics/Fresno City Coll. - Fresno
Mark Arnett/Richard Foss
209/323-4688
Pacific Automation - San Diego
Bill Campbell - 619/749-6405
Consulting Services Intl. - Van Nuys
Bob Messamer - 818/994-8881
GEI Technology Inc. - Foster City
(formerly GERI Engineering Inc.)
Don Geri - 415/879-8500
Maven Micro Systems - San Jose
Steve Kaplan - 408/289-0555
Ukiah High School - Ukiah
Kim Howlett - 707/463-5253 ext. 284

COLORADO
MCAD Design, Inc. - Lakewood
John Principi - 303/869-8844
CONNECTICUT
CIMTECH - Branford
Steve Kidd - 203/498-3032
Cutting Edge Technologies - Windsor
Steve Bertrand - 203/298-8888
DATAMAT - Norwalk
Matt Rubin - 203/855-8102
Quality Technical Services - East Hartford
Joe Napolitano - 203/951-5805
University of Hartford - West Hartford
Don DeBione - 203/243-4763

FLORIDA
Indian River Comm. College - Fort Pierce
Bill Sigurdson - 407/462-4700

IDAHO
Ricks College - Rexburg
Melvin Eckman - 208/356-1874

INDIANA
Hagerman & Company, Inc. - Indianapolis
Skip Nunweiler - 317/253-1415

MARYLAND
AEC Solutions - Baltimore
Vito Leanza - 410/823-5007

MASSACHUSETTS
Springfield Tech. Comm. Coll. - Springfield
Bill White - 413/871-7822

MICHIGAN
CAE Systems, Inc. - Kentwood
Bob Slyth
* CIM Solutions - Canton
Bob Jastrzebski - 313/981-7470
Grand Rapids Comm. Coll. - Grand Rapids
Dave Dyer - 616/771-3658
Diane Ellis - Muskegon 616/788-2755 (Home)
616/247-5359 (Work)

MINNESOTA
Albert Lea Tech. College - Albert Lea
Larry Gilderhus - 507/373-0656
Anoka-Ramsey Comm. Coll. - Coon Rapids
Tom Loftus - 612/422-3452
Northeast Metro Tech. Coll. - White Bear Lake
Jeffrey Jahko - 612/770-2351

MISSOURI
Quannon CAD Systems - Minnetonka
Lynn Kleischer - 612/935-3367
St. Paul Technical College - St. Paul
Michael Hafner/Robert Nelson - 612/221-1307

MISSOURI
Hagerman & Company - St. Louis
Sandra Hagerman - 314/993-8063
Mid-Tec Corporation - St. Louis
Dennis O'Rourke - 314/942-7552
Univ. of Missouri - Rolla
Terry F. Lehnhoff - 314/341-4532

NEW HAMPSHIRE
Computer Business Svcs. - Peterborough
Lenny Harrison - 603/924-7664
Dick Ed Concepts - Concord
Tech Amrosa - 603/225-7766

NEW JERSEY
CADD Value Corp. - Fairfield
Paul Zeman - 201/575-4521
CIMQUEST, Inc. - Piscataway
Kirk Fields - 908/699-0400
Gloucester County College - Sewell
Steve Rosbert - 609/468-5000 ext.3008

NEW YORK
American Training Center - Forest Hills
Arkady Klyemer - 718/544-8100
Brooklyn Community College - Binghamton
Karen Madsen/Gary Ostrander
607/771-5012 or 607/778-5336
CADMENSIONS, Inc. - East Syracuse
Fete DiLaura - 315/434-9787
Coll. of Staten Island (SUNY) - Staten Island
John Antonopoulos - 718/390-7521

Rochester Inst. of Tech. - Rochester
Bob Helfner - 716/475-2205
SAGG Computers - Plainfield
Arkady Klyemer - 516/336-6422
Cal. State - Glen Head
Craig Stucko - 516/671-9000

NORTH CAROLINA
Rockingham Comm. College -Wentworth
Jim Putnam - 919/342-2759
NORTH DAKOTA
North Dakota State Univ. - Fargo
Gregory Gessal - 701/237-8303

OHIO
CAD ONE, Inc. - Dayton
Jeff Opel - 513/293-3381
Cuyahoga Comm. College - Cleveland
Craig Geil - 216/987-3851
* Progressive Computing - Mentor
Mark Orzen - 216/255-0460
Struc. Analysis Engr. Corp. - Cincinnati
Richard Schweet - 513/793-4959

OKLAHOMA
Oklahoma State University - Stillwater
Craig McClain - 405/744-5714

OREGON
Mout Hood Comm. College - Gresham
Michael Durrett/Troy Donaldson 503/667-7296
Clackamas Comm. College - Wilsonville
Ron Helbig - 503/657-8995 ext. 4611
Portland Comm. College - Portland
Thomas Macraedy - 503/244-6111
Rogue Community College - Grants Pass
Del Harris - 503/479-5541

PENNSYLVANIA
Butler County Comm. Coll. - Butler
Mike Aikens - 412/287-8711 ext. 311
Micro Control, Inc. - Yardley
Marion Horan - 215/321-7474
Piston Engineering, Inc. - Horsham
Jacqueline Tarka - 215/674-9896
Penn. State Univ. - Erie
Dave Forsman - 814/838-6489
Wilkes University - Wilkes-Barre
Cliff Mirman - 717/824-4657

TENNESSEE
Precision Concepts, Inc. - Nashville
Doug Dabbs - 615/933-7060
Southern College - Collegedale
John Durichke - 615/238-2952

TEXAS
* MLC CAD Systems - Austin, Dallas, Houston
Michael and Barbara Leesley - 512/288-9126

WASHINGTON
Everett Community College - Everett
Dianne Sherman - 206/388-9564
TECH - Inc. - Seattle
Joe Browner - 206/623-1403

WISCONSIN
Mattson Technologies - Waukesha
Patrick Schultz - 414/544-6300
Milwaukee School of Engr. - Milwaukee
Marvin Williams - 414/277-7357
North East WI Technologies - Manitowoc
John Seltzman - 414/634-6595

CANADA
NEW BRUNSWICK
New Brunswick Comm. Coll. - Moncton
John Hemschik - 506/859-2538
Univ. of New Brunswick - Fredericton
Dave Bonham - 506/453-4513

NOVA SCOTIA
J. L. Isley High School - Halifax
Freston Allen - 902/421-6650

ONTARIO
Algonquin College - Ottawa
Danielle Parenty/Bey Harrison
613/594-3888, ext. 5945
CADWIRE - Markham
Bill Stovold - 416/475-5546
In-House Solutions - Cambridge
Ed House - 519/856-1471
Klear Concept Data - Peterborough
John Punston - 705/742-3354
MSR Inc. - Manotick
Alice Bunt - 613/821-3632
Ryerson Polytechnic University - C.A.T.E. - Toronto
K. Doddridge - 416/979-5106

QUEBEC
APPLICAD - Montreal
Wali Hadid - 514/336-5959
ENCS Training Center - Brossard
Eric Gauthier - 514/879-0165
Kennedy Automation - St. Laurent
Peter Barnett - 514/745-0535

DataCAD Training in the U.S.

Here's a list of resources for DataCAD® Training in the U.S. You may contact any of the following people to inquire about DataCAD Training dates, pricing, and available locations. Several of the trainers listed also do on-site training at your facility.

CALIFORNIA
CADDAC - San Jose
Carolyn Bell - (408) 997-3230
Cal. State at Los Angeles - Los Angeles
Virgil Soaman - (213) 343-4550
Nikkon Designs Systems - Hacienda Heights
Roy Yoshino - (818) 968-2230
SysCon Technology, Inc. - La Mirada
Glenn Osborne - (714) 739-0981
Talbot & Associates - Mill Valley
Richard Talbott - (415) 388-7634

CONNECTICUT
CIMTECH - Branford
Steve Kidd - (203) 488-3032

FLORIDA
Autumn Technologies - Largo
Peter Augustyniak - (813) 530-0626
David Porter Assoc. Architects - Palm Beach Gardens
David Porter - (407) 694-0100

ILLINOIS
Hagerman & Company, Inc. - Mt. Zion
Dennis Hagerman - (217) 864-2326

INDIANA
Logia & Proportion, Inc. - Indianapolis
John Mahaffey - (317) 251-0533
Tekni - Fort Wayne
Dennis Jeffrey - (219) 478-4014

MASSACHUSETTS
Madura Studios - Boston
Mark Madura - (617) 536-5326

MICHIGAN
Architectural CADD Concepts - Berkley
Tim Murad - (810) 543-1149
Architectural CADD Services - Ann Arbor
R. J. Reinhold - (313) 668-6700

MINNESOTA
Graphic Ideas - Anoka
Steve Rick - (612) 422-0141

NEW JERSEY
BAM Computergraphix, Inc. - Mt. Laurel
Michael Meighan - (609) 235-1644
Gloucester County College - Sewell
Steve Rosbert - (609) 468-5000 X308

NEW YORK
999 Design Group - Valatie
Vito Mazziariello - (518) 758-9046
CADIMENSIONS - East Syracuse
Pete DiLaura - (315) 434-9787
SAGG Computers - Plainfield
Arkady Klyemer - (516) 938-6422

OKLAHOMA
Oklahoma State University - Stillwater
Gerald McClain - (405) 744-5714

OREGON
Rogue Community College - Grants Pass
Del Harris - (503) 479-5541

PENNSYLVANIA
Butler County Comm. College - Butler
Mike Aikens - (412) 287-8711

TENNESSEE
Architectural Intelligence - Memphis
Stewart Brown - (901) 522-8889
Southern College - Collegedale
John Durichke - (615) 288-9126

TEXAS
CADOLINC - Dallas
Liana Handley - (214) 891-3812

VIRGINIA
ARCHSOFT - Burke
Bruce Kaplan - (703) 644-2816

WASHINGTON
TECH-NET, Inc. - Seattle
Joe Browner - (206) 623-1403



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Document Management: Does Your System Measure Up To The Best?

Thomas Publishing Company, the organization behind the Thomas Register, offers this wish list for companies investigating or implementing electronic document management systems. The best program for you should contain as many of the following features as possible:

- Creation of manufacturing operations and set-up sheets.
- Creation of tool lists.
- Creation of shop floor related documents.
- Intelligent forms customization.
- Import/export of forms to create text, dimensional drawing sketches and photographs directly on screen.
- 2D drawing capability.
- Immediate access to current, pending or historical information on a need-to-know basis with the assurance that the information has not been altered.
- Management of technical documents from capture and storage to control and distribution.
- Ability to transform paper- and film-based drawings of any complexity, text or photographs to digital form through an image scanning process.
- Tracking of multiple document types through their entire life cycle.
- Electronic routing of documents through company's engineering change control process.
- Modeling of paper as electronic templates with full multimedia capabilities merging text with raster and vector graphics and adding audio and video.
- Document instrumentation controls, and mechanical and electrical requirement for ISO 9000, ISA S20, EPA, OSHA and IEC certification.

The best programs contain many varied features, such as creation, drawing, management, import/export, library services and automated tasking.

- Library services.
- Elimination of redundant information.
- Automated tools.
- Automated reviews, revisions and release of document.
- Guaranteed accuracy and version integrity.
- Interface with CAD.
- Interface with MRP.

Thomas Publishing Company, 1995 and provided courtesy of Informative Graphics, creators of the document management program, Myriad 3.0.

10 Reasons to do Business with A Local Value Added Reseller

Value Added Resellers who specialize in CAD have much to offer beyond software and hardware.

1. **Local Resellers provide local support that's difficult to get from a manufacturer in another state or country.** You can feel confident when you know your VAR is just around the corner.
2. **Accountability** Value-added Resellers take responsibility for the systems they provide—software, hardware, networks and all.
3. **Technical Support** Your reseller can offer you technical support that's right there when you need it. They can help with everything from technical questions to upgrades.
4. **Training** To use technical software to its potential requires both training and on-site consulting. Your local VAR is qualified to evaluate your training needs at your firm.
5. **Integration** VARs bring together knowledge or workgroup computing—networks, software, hardware, document management, plotters, and more—to make components of a system really work together.
6. **Technology Refresh** VARs are constantly reviewing and testing new products to make their customers more productive.
7. **Competitive Value** VARs can provide software and hardware along with training and support. Your reseller's value is based on his or her ability to add value to the way you work through implementation and training.
8. **Positive Satisfaction** Your VAR wants to satisfy you with superior products and customer service at a fair price. Because their business depends on it, VARs make satisfaction the top priority.
9. **Industry Knowledge** VARs stay up to date with all aspects of the industry so they can better understand your specific needs and the solution you require.
10. **Partnership** One of the best opportunities of working with your local VAR is developing a partnership with mutual benefit.
Need the name of your local CAD Value Added Reseller? Call 203/298-8888 or look in the December 1995 issue of KeySolutions.

INDUSTRY BRIEFS

Forecast: Investment, R&D to increase

Investment in research and development in the United States will show a modest increase in 1996, according to the annual Battelle-R&D Magazine forecast.

R&D expenditures in 1996 are expected to increase to about \$174 billion. This is a 1.7 percent increase over the \$171 billion that the National Science Foundation estimates was spent in 1995.

Although R&D investment stalled in the early 1990s and the predicted 1996 increase is nominal, this period of stagnation is concluding and R&D spending will increase in the near future.

"Despite the fact that industry and the federal government are doing battle with their respective budgets, and changes are being forced by major trends in the global economy, the commitment to today's research is critical to tomorrow's economic strength," said Jules J. Duga, Battelle research scientists and the forecast's principal author.

The apparent gradual recovery in R&D expenditures follows a pattern that Battelle predicted five years ago. Noting the substantial growth of R&D expenditures in the 1980s, it was apparent that such growth would not be sustained. Battelle predicted a slowdown in growth in the early 1990s, followed by an increase in R&D spending by mid-decade.

Major predictions for 1996 include:

- Federal R&D spending will decrease. Battelle estimates the federal government will spend \$60.4 billion in 1996, about a half-percent less than was spent in 1995.

- Industry will increase R&D spending. Industry will spend \$104.6 billion in 1996, an increase of about 3 percent over last year.

- The remainder of R&D expenditures—\$8.8 billion—will be supported by universities and non-profit organizations.

- A key to industrial investment is that long-anticipated real growth—spending that will outdistance inflation—will occur in 1996.

- Private industry will increasingly look for opportunities to outsource internal R&D functions.

- An increasing share of U.S. industry's R&D will be performed off-shore, primarily in facilities owned by the same industry.

- The federal government's efforts at budget-cutting, coupled with significant philosophical changes toward the national science policy, will broadly affect federal R&D support and the federal laboratories.

"Industry and government, and to a lesser degree academia and other performing institutions, will have to look carefully at the ever-changing fabric of technology, economics, business, and global marketplaces. Bold actions must be undertaken to assure a reasonably successful journey," Duga said.

Prototype Express moves to larger facility

Prototype Express, the leading producer of stereolithography parts, recently moved to a larger and more complete facility. The extra space allowed for the addition of Selective Laser Sintering capabilities to complement the already existing stereolithography services.

The Sinterstation 2000, purchased from DTM Corp. of Austin, Texas, creates functional prototypes made from such materials as polycarbonates, glass-filled nylon and fine nylon. Compared with SLA parts, SLS prototypes are much stronger and can serve most functional prototyping purposes.

The current equipment inventory is four SLA 250s, two SLA 500s, and one Sinterstation 2000.

TI, Momentum form alliance

Texas Instruments has announced the formation of a strategic alliance with Momentum Microsystems with an intent to include the Aviator wireless connector as an option with TI's notebook computers.

TI officials said the relationship with Momentum demonstrates TI's commitment to wireless communications at a reasonable price.

The low-cost Aviator wireless network uses radio frequency to connect few than 10 notebook computers with virtually no line-of-sight limitations. With a typical operating radius of at least 75 feet, the Aviator wireless network allows users to connect with others on the personal area network (PAN) at any time to share files, messages, e-mail or peripherals without wires and cables.

The Aviator unit is about the size of a deck of cards and draws power directly from the parallel port. The expected retail price for the startup kit, including two units, software and instructions, will be \$249.

Intel graduates from Estimation Program

Intel Corp., the largest manufacturer of computer microprocessors, is the first graduate of a new Software Estimation Certificate Program created by the Center for Project management of San Ramon, Calif.

The program was created to address the concerns of businesses which found that final project costs greatly exceeded their original budget.

The center's program provides information on estimating theory, skills, tools and practices. The program includes corporate and personal capability assessments, in-depth seminars and workshops, and development of a comprehensive plan to implement sound estimating practices in each candidate's organization. The program's seminar and workshop sessions combine lectures, case studies, real-life projects, scenario simulations and guest speakers.

According to program officials, a company can more confidently commit to their projections, while maintaining high-

quality standard, through system integration and testing, project documentation, and client and training.

3D Systems breaks ground on new facility

3D Systems Corp. has broken ground on a \$4 million manufacturing facility in Grand Junction, Colo. The 67,000-square-foot facility is scheduled for completion in April.

The company also announced the opening of an office in Toronto to provide local sales, service and support to the Canadian market. Juris Kornets will head the new office.

The Grand Junction facility, to be built on a 10-acre site in an industrial area near the airport, is the first phase of a 180,000-square-foot project the company expects to complete in three phases over the next several years.

Robert E. Horrell, 3D System's vice president of operations, said the company needs to expand manufacturing capacity to meet anticipated demand for its products.

For the first three quarters of 1995, 3D System's reported 43 percent growth in product sales over the same period last year. The firm anticipates incurring a restructuring charge of \$400,000 to \$550,000, net of certain economic incentives, in 1995's fourth quarter as a result of the move.

In addition to manufacturing, the company also will relocate to Grand Junction its purchasing, shipping and receiving, testing and quality assurance, manufacturing engineering, and customer service departments. The company's headquarters will remain in Valencia, Calif.

3D Systems Corp. develops, manufactures and markets stereolithography systems to a wide spectrum of industries, including aerospace, automotive, computer, electronic, consumer and health care.

Myriad integrates with Documentum Enterprise

Informative Graphics Corp., developer of Myriad, a universal document viewing software, has announced its integration with the Documentum Enterprise Document Management System.

Myriad software view, redlines and plots more than 10 CAD (vector), raster, word processing, database and spreadsheet formats.

The Documentum EDMS is a family of open client/server software products designed to help high-end companies create and reuse intellectual capital effectively across the enterprise. Documentum EDMS applications derive their power from the Virtual Documentum, a unique combination of document objects that can be retrieved from any source across the and assembled upon demand according to a company's business rules.

Integration between the two products allows a whole-product solution for customers who need to access documents in a managed environment.

DATA CAD 7 DWG READ/WRITE CAPABILITIES

First Impressions

I have experimented with DataCAD 7's new DWG read and write capabilities and have had very good results when saving a DataCAD file to a .dwg file format. A few observations: My associative dimensions exported as lines and text, thus losing their intelligence; through DXF they retain that feature. Associative hatches exported as polylines as expected. Overall, I am pleased with the writing of the DWG file, and just wish associative dimensions stayed that way and maybe associative hatching could become blocks when they go to .dwg. All other entities, 3D included, seem to go very smoothly.

Dimensions from ACAD imported to DCAD7 as associative - a big plus. All I needed to do was go to the dim menu and change the associative settings to my preferences. Hatch patterns came into DCAD7 as symbols, but at least I had hatching without taking up a lot of file size.

I very much like layers that were "off" in the ACAD file coming into DCAD "off" also. Many of the consultants we work with often have entities in their files that are on layers turned "off" they never intend to plot. I guess they use it like base or seed info. Now I know what I can dispose of, or not bring in at all. Very nice feature. All in all, DCAD's read and write of .dwg files functions faster than DXF methods and, other than a few quirks, is a good step in the right direction.

Steve McGinley
mcginley@bays.com

Steps for Using Translator

Thanks to Richard Morse of Madura Stu-

dios for setting me on the right track. He advised that he has run the translator exclusively from XFER subdirectory and it works. The following steps may also help remedy the sparse documentation for this essential utility.

1. Preparation for translation
a. Move TRANSFER.DWG from DEFAULT directory to the XFER directory.

b. Make a TRANSFER.DC5 drawing in the XFER directory. See below. (Not essential to translated from DC5 to DWG.)

2. Prepare DC5 drawing for translation

- Move to XFER directory.
- Explode associative dimensions. They don't translate yet.
- Explode associative hatch. Only the outline translates.
- I haven't checked if layer names still need to be caps, but bet they don't.
- Symbols translate, but I haven't tried mirrored symbols.

3. Translate XFER/xxx.DC5 drawing to DWG

- Pick source DC5 file located in XFER directory.
- Make above drawing prep changes.
- Pick File/O/DWG-DXF/WriteDWG.
- When prompted for destination file name, make sure the destination file will be made in the XFER directory, otherwise change path using newpath.
- When prompted for default, make sure

path is to XFER directory and select TRANSFER.dwg.

- DOS screen will then show blocks being added to new file, then each layer.
- Once transfer is complete, file size should be comparable or larger.

4. Translate XFER/xxx.DWG drawing to DC5.

- Start a new DC5 drawing located in the XFER directory. Use newpath to get there.
- Pick File/O/DWG-DXF/ReadDWG.
- Pick a DWG file that is in the XFER directory to translate.
- Pick the TRANSLATE.dc5 default in XFER directory, if it exists, and if prompted for a default (not sure you are always prompted.) If Translate does not exist, pick any other xxx.DC5 drawing located in the XFER directory.
- The DOS screen will list the number of entities being added to the drawing. When finished the DataCAD, screen should rewrite with the drawing.
- If you get no drawing entities, the file may be empty (as in the TRANSLATE file) or if there is a layer name "layer(0)" listed, then you did something wrong.
- WriteDWG and then ReadDWG. This is a good way to see what your consultants will be getting and to check your process for the translation.

This technique works. I'd be interested in variations on the theme which also work. I haven't tried DOS prompt translator, which probably doesn't have the path limitations.

Cadkey is working to improve the path problem. I also haven't looked at on-line help, though I didn't have much success getting there going from DOS prompt - although I got the first screens.

Hints

In my quest for decent speed in translating big files to DWG, particularly with lots of associative hatching, I found the LayersON selection under WriteDWG invaluable. I would load the drawing to be translated from the XFER directory. Turn on several hatch layers, explode associative hatch using 3D/3DEntities/Explode/rolines, then WriteDWG with layerson instead of all layers, to a new file with a unique name. Then I would abort the drawing and call it up again, repeating the process with two other hatching layers, or whatever. This way I avoided exceeding the \$192K drawing limit of DataCAD, which caused problems when I exploded assoc hatch and dim.

While my experience with the Translator has been less than simple, it is a much-welcomed tool, which I hope will get better. It has enabled me to "feed" design and presentation drawings to other firms for conversion into construction drawings on large projects. Therefore, my experience has been in one direction. Additionally, I do not have full report of the success of the translation from the Arch-Eng firm doing the construction drawings.

Rick Gleason, AIA
The Gleason Partnership, Architects
617/267-6980

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HOT TOPIC: DIAMOND STEALTH VIDEO CARD

Here is a sampling of comments and tips from the DBUG Forum, an active group of DataCAD users who share knowledge and experience over the Internet. To participate, send an e-mail message to majoridom@world.sdsi.com and type **SUBSCRIBE DBUG** in the message line.

VESA Mode Help

One DBUG participant shared that they downloaded a program which seems to make DataCAD run much faster in VESA mode. The Universal VESA BIOS Extension (UNIVBE) extends the Video BIOS of just about any super VGA card, making it compatible with the VESA Video BIOS Extensions. This utility increases the performance of existing software that uses VESA standards. This shareware program can be downloaded from: <http://www.sitichsoft.com> or CompuServe Go vesa (File library 12) or AOL Keyword VESA or phone Sitich Software at 800/486-4823.

On this suggestion, I downloaded the VESA and have found on my machine that a file that used to take 24 seconds to redraw now takes about 13 seconds. This is using the VESA256 driver on a ATI Mach 64 2MB Ram card, in a P5-90 machine, 16MB ram. Are there any other stories about this accelerator? Are there any others as good or better?

Roger L. Donaldson AIA
DonaldsonR@aol.com

Diamond Stealth Video Card

The latest S3 (924) driver (CK_924.EXE dated 8/7/95) on the Web is zipped in a file called S3_NEWZIP dated 8/16/95. It is the one that ships with DataCAD 7. An older one exists on the web (S3_924.ZIP) which was a semi-beta version.

Not only does this driver work well with the Diamond 64, but I'm running it very nicely with a Number9 GXE Pro PCI card - wicked!

Ed Wolfstein
AIA, MRAIC, NCARB
ewolfstn@ingenier.net

People keep having problems with the S3 driver and the Diamond Stealth. I found the same problems with the driver on the Cadkey homepage, but there is a driver available from Cadkey direct. Send e-mail to Bob Schwein schwein@qgate.cadkey.com and ask him to send it to you.

John Helm, Architect
jhelm@electriciti.com
<http://www.electriciti.com:301-jhelm/>

I've been following the discussion regarding the Diamond Stealth 64 video card. I had been using the VESA256 driver with this card with no problems, except I couldn't use the [Alt][Tab] feature when running out of Windows. Drivers CK_911 and CK_924 (downloaded from CADKEY Web page) wouldn't work at all. Recently I discovered that the

VESA16 driver works great and allows me to [Alt][Tab] as well!

DJFey@aol.com

We've noticed a lot of questions on the Diamond Stealth cards and video drivers, including one office which has purportedly put a 64 PCI 2MB version away in a drawer (please send our way for \$50 rebate). As we have evaluated many cards for performance in DataCAD, here is the view from Madura Studios:

The Diamond Stealth 64 with 2MB VRAM is the only card we have found that will reliably run the S3 driver (version 924). This is the card we are currently using on all the machines we build, and is the only card that CADKEY endorses for the S3 CK_924 driver. Drivers are available from the CADKEY BBS.

If you are experiencing hanging upon exit from DataCAD with an S3 card, it is most likely due to the fact that you have a 1MB card. Upgrading to 2MB should solve the problem. Running DataCAD on those Diamond cards is truly the only way to go. If you are considering a new system, the extra investment in a 2MB VRAM card is well worth it.

Richard Morse
Director, Madura Studios Inc.

The latest version of the DataCAD S3 driver, S3_NEWZIP, is available from the Cadkey BBS at 860/298-6405 or 860/683-1379, the Cadkey Home Page, <http://www.cadkey.com>, Cadkey CompuServe forum library (GO Cadkey), or on CompuServe directly schwein@qgate.cadkey.com. If there are any problems regarding the S3 driver, please let me know.

Bob Schwein
AEC Product Group
Cadkey, Inc.

Printing Legal Size

I am trying to print at legal size. I tried setting the CUSTOM setting to 8.5x14 and to 7.5x13. After I click the layout button and then set the target over the area that I want printed, the final print consistently shows the drawing a couple of inches to the right and the drawing is off of the page. I currently have a HP4L LJ. How can I fix this? Do I need to use the Laser Plot Macro to make this work?

Tia
Larry L. Bissell Architects
San Luis Obispo, CA

Draw a box 13 inches long and 7-1/2 inches wide. Set a custom sheet to 8-1/2 x 14 (14 enter, 8.1/2 enter). Set Scale to 12 inches. Do a QWdLysr and place the lower left corner of the layout box just outside of the lower left corner of the drawn box. Hit printer and set up to go into PrtPrnt. In PPE go to next menu where printer is listed at the top left.

Under that, set Paper source to "manual feed slot" and under that set Paper size to "legal." Under that, change Work directory to "c:\cad7\ppp\system" and save this setting as "legal.s". Also make sure you have the right printer and port selected. Exit PPP and SetSheet to "legal" and hit Print. I believe the problem you were having was with the "manual feed slot" setting. When I had that on the menu to the other option, it was doing what you described.

Jeff Tagerman
Tech Support,
Madura Studios Inc.

Send for Info on Macros

To read about our 3D modeling macros or how to create auto-2D elevations for DataCAD version 5 through 7, send a message to psj@benetnet.com or call People Software at 800/647-3366. Please include your fax number of mailing address.

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Preview the scanned image and select a drawing type. IVECTOR accepts RLC and Group 4 TIFF raster files for conversion.

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Making Custom Scales

I broadcast this tip about making custom scales in DataCAD in June on the DBUG forum. So that I can also make some golf greens for dough, I developed a Cheap Ware disk of custom scales (available from Cheap Tricks at 617/662-0020) called "Pseudo-Plot-To-Fit." It sets up custom calculated scales for you so that you can fit your 24x36-sized drawings "to fit" onto letter-, legal- and ledger (11x17)-sized paper.

To set up any scale in DataCAD, use the equation: 1 divided by the scale you want (i.e. 30) and then divide that number by 12 (answer should be .002778). Don't ask this non-computer geek why this numerical relationship exists for DataCAD's scales. It is just does and I am sure there is a rational, computer-type reason. I just don't care about how the formula was arrived at. Keep that number result to use in the following DataCAD settings:

1. Go into the Settings menu command.
2. Go into the EditDef menu selection.
3. Pick Scales
4. Pick List to see a listing of the scales already in DataCAD. DataCAD has a limit of 18 different scales it can list at any one time. You may need to wipe out one of the extraneous scales (i.e. 12" or 11/1600, etc., you choose) in order to add in the 1:30 scale desired. I have broken out and saved separate scale settings for all architectural scales in one scale menu and all engineering scales in another menu. The way I don't have to lose any scales for use and I stay under the 18 scale setting limit.
5. Hit the right mouse button to get back

to the List, Add Change, Delete settings.

6. Choose Delete, then pick the scale you want to blow away.

7. Pick Add, then type 1:30; you will see your typing at the bottom line on the screen. You can type in any text to identify your new scale. It does not have to be any sensible number. You can call it "30th" or "30ENG" or whatever you want to identify the scale. After typing the scale name, hit Enter.

8. Now type the numeric value you calculated for this scale (i.e. 0.002778 value). You will again see this typed at the bottom line on the screen. Hit Enter.

9. Pick List and you should see the scale entered in the listing of scales. This is a good double check to make sure that you calculated the correct scale value. You should see the 1:30 scale setting positioned in the correct spot between a smaller scale (i.e. 1:40, 1:60, etc.) and a larger scale (i.e. 1:20, 1:10, etc.). If not, then you did not calculate the correct scale value by the formula noted above.

David Porter AIA
Palm Beach Gardens, FL
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Good Rendering Programs

A good portion of what we do is model and render and use a number of different programs to get the job done. We use 3-D Studio extensively and would find it hard to continue without it. It's a bit on the expensive side, approximately \$3,000, also, it is fairly difficult to learn. We've also used a number of different paint programs and some of them aren't too bad. Then the problem is you have

to find a program to grab to screen. Hyjak works, but with limitations. There are other programs which claim to do this, but we're still looking. If you really don't want to spend too much money and you're willing to invest a bit of time, then perhaps you could get your hands on a shareware program called POVray or (the long version) PERSISTENCE OF VISION-Ray Trace. There is a newswet dedicated to it. The product is continually improving and nothing on the commercial market can give better quality. Along the same vein, look into Moray and Ncpoint. The good thing about these programs is you can try them before you buy 'em by downloading them through FTP.

Mal. McLeod
Halifax

Speed Printing Tip

Under Windows for Workgroups, printing from a DOS CAD program to the HPGL printer is impossibly slow. We send it out to a file, and then shell out to DOS and type Copy (file name) LPT2. This is also much faster than printing under DOS, so it is standard practice here. Plotting from a DOS program through Windows is also very slow. It is entirely plausible that these problems are not entirely related to Windows, but to the DOS/Windows interface, and could even be considered a problem which can be associated with any older program. I have used Windows programs (MicroStation, for example) which have completely acceptable printing performance.

Rick Gleason, AIA
The Gleason Partnership, Architects



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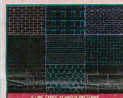
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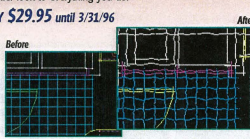
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