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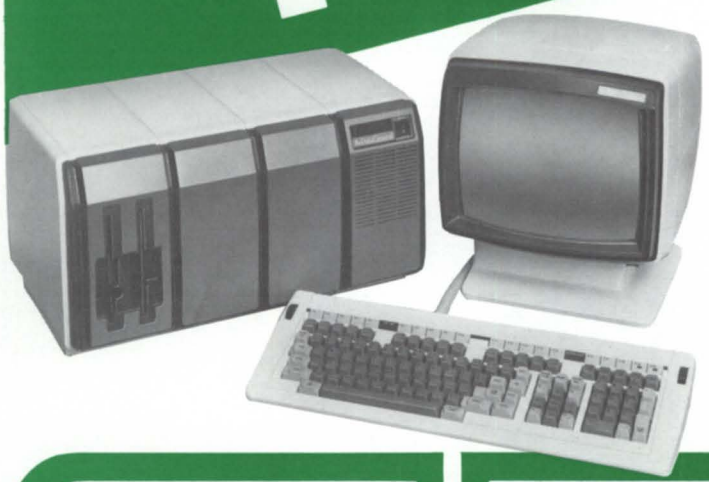

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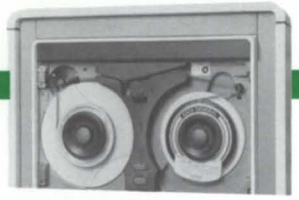

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The Magazine of the North American Data General Users Group

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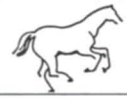

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WordPerfect Corporation proudly announces the release of *WordPerfect® Library* for Data General AOS/VS computers. The library package, combined with *WordPerfect* and *MathPlan*, offers a broad range of high-quality office automation software.

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Evaluation copies are available for a $35 media charge. And for those of you currently using WordPerfect, we offer a 20% discount on the library until the end of the year.

MathPlan® 2.11 and Trendview™

But the library isn't the only new item on the shelf. WordPerfect's spreadsheet software, MathPlan, has now been enhanced considerably, and will integrate with Trendview, Data General's graphics package. With MathPlan 2.11, Trendview, and the appropriate terminal, you can create pie charts, color and shaded graphs, etc.

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WordPerfect news

The price for WordPerfect on AOS/VS systems has been adjusted slightly: $2,000 for MV/2000DC and MV/4000DC, $4,000 for MV/4000-MV/8000, $5,000 for MV/10000, and $6,500 for MV/20000.

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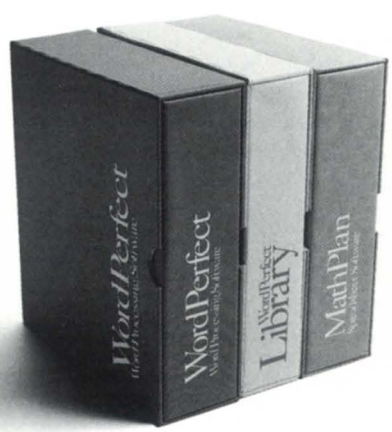

WordPerfect
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The best medicine

Music may have charms to soothe the savage breast, but laughter is good for what ails you. As incoming NADGUG president Calvin Durden notes in the interview that begins on page 8, Conference 86 was by-and-large a pretty intense affair, but there was ample time for laughter, too.

The loudest laughter probably came from the banquet hall as Kurt Kilpatrick (''an attorney by training . . . and a humorist and professional speaker by choice'') lampooned nearly everyone in sight. But upstairs the children were laughing, too, as Mickey Mouse and Donald Duck were on hand to serve them their own banquet, followed by a magic show and movie. A call came last week from a man in Holland whose children were still talking about their special evening. He asked if I could send any pictures of the children's program. It didn't matter if his kids were in the photos—he just wanted something to help them remember the evening.

For me, the most vivid memories from Conference 86 are of the water volleyball games that took most of the night, several nights. There was lots of laughter there, too, as players made up in enthusiasm what they lacked in expertise.

This was my sixth NADGUG conference, and I know I'm not alone in thinking it was the best yet. The quality and diversity of the technical sessions were outstanding, and the exhibit area was the largest and most informative ever. That in itself was worth the price of admission. But what made Conference 86 special was the underlying spirit that made laughter so much easier—the sense that we (whether we are OEMs, end-users, or DG employees) are making progress on shared concerns, and therefore can *afford* to laugh.

■

One of the major changes to come out of the conference was the decision by the Executive Board to cosponsor a NADGUG electronic bulletin board as part of DGSI's On-line Information System (see article on page 10). It was not an easy decision, because the user group already had a successful bulletin board under the sponsorship of Rational Data Systems. The new arrangement offers certain new advantages to users, but the old board paved the way; it proved that there is

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How to Beat the COBOL Application Development Backlog

First, the tools

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a sizeable group of users with the equipment and motivation to use it.

In voting to cosponsor the new bulletin board system, the Executive Board made it clear that NADGUG will continue to support the old system. In effect, this will let members vote with their modems for the system that best suits their needs—or perhaps the dual bulletin board arrangement should continue indefinitely. A lively debate on the subject has already started on the old board. If you want to take part, dial 415/924-3652 (300 or 1200 baud).

■

For people who weren't fortunate enough to attend the conference, there's still a way to tap the technical information from the sessions. Most of the sessions were taped by a professional service, so good quality audiotapes are available at very reasonable prices. See the order form on page 37 for more information.

■

A few topics seem to dominate discussions at NADGUG's annual meetings. Some of them are perennial, such as support for foreign terminals in AOS/VS. Others are spin-offs from recent developments at DG.

In the latter category are the MV/7800 and MV/RDOS. This month, *Focus* columnists devote a lot of attention to both of these developments. While at the conference, Tim Maness was able to run some of his favorite benchmark programs on the new MV/7800. The results, which appear on page 24, demonstrate that the new machine may be even better than users had hoped.

To some, the MV/7800 looks like the sleeper of the year. It got relatively little attention in the trade press, and Data General's exhibit area seemed to give it a little less emphasis than the company's new Dasher/286 and optical disk drive. As a replacement for the MV/8000, the MV/7800 may not have the star quality of some announcements, but it may be the best thing DG has ever done to help companies move their operations onto more cost-effective hardware.

MV/RDOS has the potential to be the second best thing. As Tim Boyer points out (page 38), the new 32 bit RDOS doesn't go quite far enough for many users. Still, it's a significant development for RDOS users, and it provides an upgrade path for users who can live with the upward limits of the MV/2000. And perhaps if users demonstrate enough interest in 32 bit RDOS, DG could be persuaded to go the extra mile and offer it across the MV/ line. Δ

—G.F.

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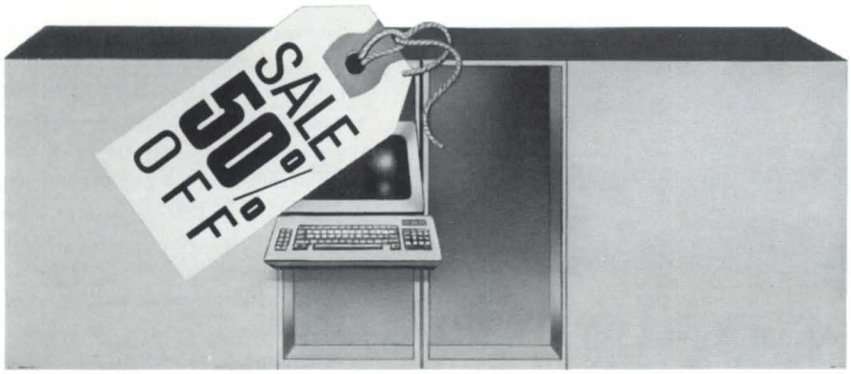

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Between-session snacks offered challenges of their own.

Ambitious goals

An interview with Calvin Durden, NADGUG's new president

Interview by Greg Farman
Focus Staff

Calvin Durden has been a NADGUG anchorman for longer than most members can remember. When he first began attending the group's annual conferences in 1977, they were still held in conjunction with the National Computer Conference. By 1980 he was not just attending, but also responsible for planning the annual meetings—a task he continued until 1985. In 1984 he was elected treasurer, and last year he served as vice president. As the group's new president, he is uniquely qualified to reflect on how NADGUG and its annual meetings have changed over the years. The following interview took place the week following Conference 86.

There was so much going on in Orlando that it's hard for most of us who attended Conference 86 to form an overall picture. As someone who has helped organize NADGUG's annual meetings for the last six years, how do you think Conference 86 stacks up against previous meetings? Would you share a few statistics and impressions?

It was probably the best conference we've ever had. We made some changes in the format this year, going to a five-track presentation schedule as opposed to the four tracks in the past. We had more presentations to choose from, which always helps, and we scheduled more presentations in areas that we thought would interest the attendees. We also expanded our exhibit area.

Something else that stands out was the number of people who came a day early to participate in the Educational Services seminars and the presentations on CEO by the Office Automation SIG. There were 127 people for the CEO presentation.

It was also the first conference where we brought in an after-dinner speaker who had nothing to do with computers. He took some humorous potshots at quite a few of the people who have been involved with the group. I think that was just the thing to break up the intensity people had put into the conference up to that point. After sitting through the Ed Services seminars or the CEO seminar, and then two solid days of sessions, it helped lighten the load to have somebody poking a little fun.

Statistically, it looks as if attendance was up, although we haven't finished compiling the numbers yet. The number of hotel reservations was larger by far than anything we've had before. Part of that is attributable to the increased number of exhibitors, but part of it is probably from an increase in the number of end-users in attendance. My guess is that overall attendance was up slightly from the 1985 conference.

Weren't the attendance numbers for the 1985 conference a little inflated by the large number of Data General employees driving in to Boston?

Yes, last year we had a lot of people attending from Data General, which was very good, because there were a lot of people who would not normally meet end-users, but they were the people who could get your problem solved. I think that we should remember that and at least periodically schedule meetings in Boston so we can keep up those contacts.

That did skew our numbers up somewhat in 1985, and in 1986 we dropped back to a more normal level of DG participation. However, overall, I think we had a slight increase in attendance, with more end-user participation.

The general format of the conference is evolving now as the level of attendance and the type of people attending is moving away from OEMs and toward more end-users.

Overall, the comments I've heard about this year's conference have been very positive. We certainly had fewer glitches than any other conference I've been associated with. That's due to the continuity we've had with the NADGUG staff, and their ability to see something going wrong and get it straightened out before the attendees ever saw there was a problem.

This year's conference was promoted as a shirtsleeve meeting and a family vacation. How did that work out? Is it something NADGUG will do again?

It worked extremely well. A lot of families attended. Since it was the first time we ever tried it, we were a little concerned about whether people would actually bring their families. It isn't the type of conference you'd want to do every year, but it lent itself well to the Orlando locale. Next year's meeting, which will be in Las Vegas in October, wouldn't work out as well, but I think at some future date we'll try it again.

What are the plans for conference locations and dates going beyond next October in Las Vegas?

We're currently negotiating a contract with a hotel in Philadelphia for 1988. The dates aren't final on that one yet. For 1989, we're looking at New Orleans as the primary city, and we'll be making a decision on the hotel sometime in the next two to three months. For

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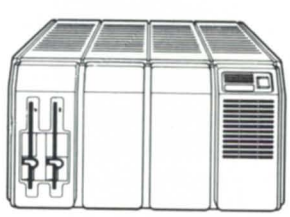

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OASYS chairwoman Charlene Kirian gets a demo from Intercon's John Paroda.

1990, we'll be going back to the West Coast. At this point the leading city is probably Seattle.

We're trying to look farther and farther ahead. As the group gets larger that becomes a real problem. It gets harder to find a city with a hotel property that can handle us under one roof. At some time we'll have to make a major change and go to multiple hotels and a convention facility of some type.

I hope that's a few years off. We want to grow, but not too fast.

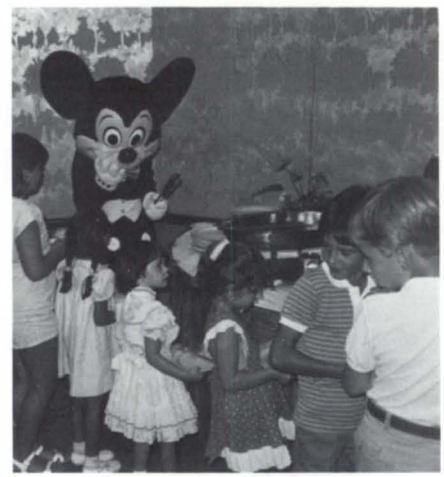
As usual, there was a lot of official NADGUG business to transact, both at the Executive Board Meeting on August 10, and at the General Business Meeting on August 13. Can you summarize what happened at those business sessions and how it will effect NADGUG members?

Probably the most visible change will be the increase in dues for individual members, which we're raising for the first time since the group was formed. An individual membership will be $30—which is still inexpensive compared to a lot of things, especially since we now have membership benefits like *Focus* and the new member roster that will probably be mailed out in October. By raising the rates slightly, we will be able to have the funds to do a better job of running the organization.

We've had a tremendous increase in the number of regional interest group and special interest group startups. There were five RIGs and SIGs approved at the Executive Board Meeting, and another 14 in various stages of being started. Part of the funds from the increase in membership dues—and also the increase in numbers of members—will directly benefit those RIGs and SIGs. We have a videotape library of conference sessions that were taped so they can be used as programs for the RIGs. We also provide startup funds for RIGs and SIGs as they get organized.

At the Spring board meeting we voted to let the user group provide funding for the officers to attend our meetings. This was done primarily to encourage involvement by people, particularly where the companies don't give the level of support for user group activi-

Mingling with Mickey at the Children's Carnival and Dinner.



NADGUG to sponsor bulletin board with OIS

Following up on an offer from Data General Service, Inc., the NADGUG Executive Board voted on August 10 to offer NADGUG's electronic bulletin board in conjunction with DGSI's new On-line Information System. As reported in the July and August issues of *Focus*, OIS now offers 24-hour access via the CompuServe network, and features more than 10 Data General services, including Software Trouble Report status reports and data base, information about known software problems, solutions, and workarounds, and downloadable patches.

As the sponsor of the user bulletin board area in OIS, NADGUG will be responsible for its maintenance, review, and editorial content. Through CompuServe, OIS will supply the vehicle for NADGUG to make the bulletin board available to most members without long-distance phone charges. Previously, the NADGUG bulletin board was sponsored by Rational Data Systems, and most members had to place long-distance calls in order to log on.

Approximately 50 NADGUG members got a walk-through of the OIS system during a workshop at Conference 86, and many more learned about the system during demos at the DG field engineering booth. The OIS staff said they got a great deal of feedback at the conference, and are planning a list of enhancements to OIS based on feedback from NADGUG members.

The new NADGUG bulletin board resides on the top menu for OIS. As with OIS, the bulletin board is accessed through the CompuServe network with an ID and password issued by OIS. The bulletin board allows users to read and send messages, respond to existing messages, read "threads" (strings of messages that relate to each other), search messages by topic, and read special bulletins. The overall lay-

Rene Dominguez explains the fine points of Medbar's solar-powered DG/One.

ties that I've received from my company. I've enjoyed support from my management ever since I first got involved with NADGUG in 1977. A lot of our management people have been involved with industry associations, and saw the benefit of getting involved, but not all companies are that supportive. We don't want the financial side to be an impediment to people participating in the group.

DG's Frank Keaney surprises Calvin Durden with a DG/One.

A lot of NADGUG's business is carried out between meetings by the Meetings Committee, the RIG/SIG Chairpersons Committee, the Publications Committee, the Planning Committee, and the Audit Committee. Would you give a quick rundown of what these standing committees have been doing during the last year?

That's actually another area where there were some changes. We put out a statement of policy from the various committees to give them a direction in which to work. We looked at the makeup of the committees and attempted to increase participation. All the committees will now have a vice chairperson who can take over in case the chairperson has to drop out for any reason. We split the duties of the chairpersons to reduce the amount of work any one person has to do. Since NADGUG is a volunteer organization, spreading the workload should enable more people to participate and get some new blood and ideas into the organization.

Of course there were also changes in leadership, with you taking over as president, and Rene Dominguez as past president taking the reins of the Planning Committee. Who are the other leaders of the group this year?

We have a new vice president in Joyce Carter, and we also have a new RIG/SIG chairperson in Paul Duck, who steps into the

(continued on page 56)

out was not finalized at the conference, but several bulletin board areas are planned for individual SIGs or general topics.

OIS is available 24 hours a day, 7 days a week, with no sign-up or monthly fee. Only one ID and password is required for access to both the bulletin board and OIS. Hardware requirements are equally simple: just a modem (300, 1200, or in some instances 2400 baud) and almost any personal computer or terminal. Users can connect to the bulletin board by dialing the CompuServe telephone number nearest them—in most cases this will be a local call. (TELENET, TYMNET, and DATAPAC local nodes also provide connections to the CompuServe network.)

Once logged into a "chargeable area" from CompuServe, the caller is charged at different rates depending on the type of service used. The charge for accessing the NADGUG bulletin board is $25 per hour. Other charges in OIS are tiered according to the level of information accessed. General product descriptions, current revision notes, and service information are $40 per hour; technical articles, patches, DG-Talk, SAR, STR Look-up, and ISV forums are $55 per hour; down-line loading of patches is $70 per hour.

According to the OIS staff, the service is newly designed to provide better technical information than the old OIS. It has its own technical and marketing staff, and many of DG's major departments plan to use it as a vehicle for more effective communications with customers and DG's internal organization. The goal of OIS is to provide its users with the most complete and up-to-date information available.

To get an OIS ID and password, contact a DG field engineering telemarketing representative by calling 800/325-3065 (800/952-4300 if calling from Massachusetts; 416/823-7830 in Canada). Support Plus and SPSA customers will receive an hour per month on OIS free of charge. An ID and password will be issued to each new user and mailed with a user's guide after the proper application has been filled out and returned. Δ

—G.F.

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Circle 38 on reader service card

Interchangeable parts

Why create a new part if one already exists to do the job?

by Richard Ernst
Special to Focus

The proliferation of designs and processes has been an insidious cancer in American manufacturing, brought on by two factors: our benevolent attitude toward waste, and our own technology itself, in the form of computer-aided design. What used to take designers a day or two to accomplish now takes them as little as 10 or 15 minutes on a modern CAD station. This means that it has become far easier for these engineers to design a new part than to search for something that already exists on a disk pack or in a file cabinet identifiable only by a part number.

As soon as the engineer, flushed with creativity, hands down his new design, he starts in motion a whole series of events that for the most part go unnoticed by the engineering department. These involve everything from numerical control tape generation to new tool design, to process planning, and can cost a company several thousands of dollars before the part ever reaches production. Figure 1 shows some of these typical preparation steps.

Fortunately, a handful of progressive manufacturing companies noticed the escalating costs due to the proliferation of parts and processes in the early seventies. They began to search for ways to standardize on the designs they already had. Group Technology became the methodology these companies embraced, because it provided the tools to eliminate redundancies, standardize on preferred designs and processes, and to facilitate communication between engineering and manufacturing. More recently, it has become recognized as a cornerstone of CIM and almost a precondition for the just-in-time manufacturing concepts.

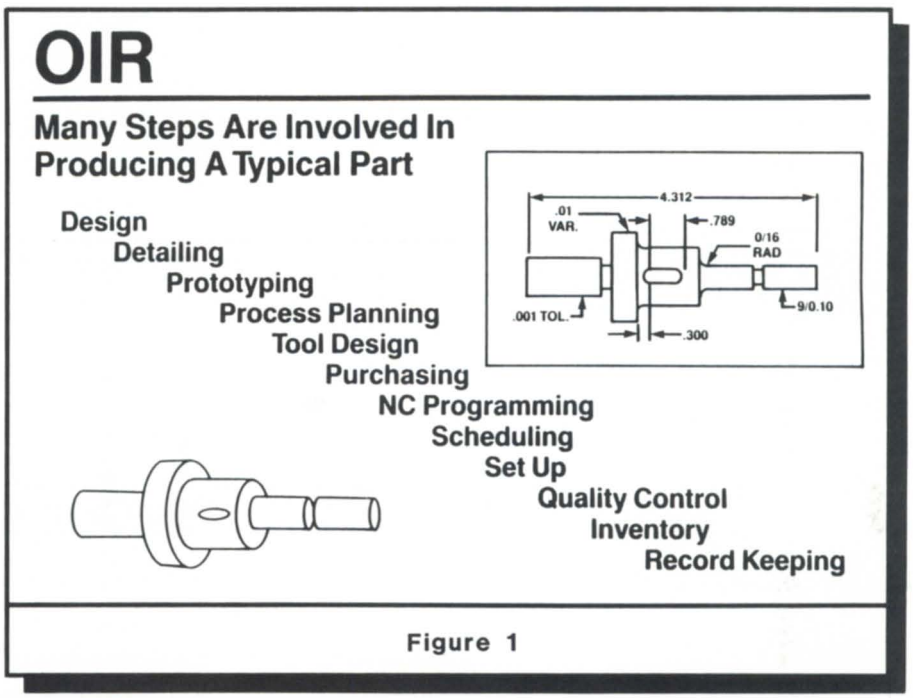

Figure 1

Coding and classification

The fundamental premise behind Group Technology is that we cannot find similarities between parts with any degree of accuracy or consistency unless we know their attributes. In the case of machined parts, these attributes might include main shape characteristics, machined faces, dimensions, tolerances, and material chemistry. In the case of printed circuit boards, attributes might include circuit type, board laminations, hole configuration, protective coatings, and power supply. Any group of items can be classified by its attributes; it all depends on how the users want to retrieve and group these items. Once the attributes are defined, a code number can be created that will describe any item within that data base.

There are several different kinds of code systems in use today to describe everything from discrete parts to electronic components to people. An example of a typical code for machined and sheet metal parts is shown in Figure 2. This code was developed by Organization for Industrial Research (OIR) in Waltham, Massachusetts, a supplier of group technology software and services. Although OIR's standard code is 18 positions in length, it is usually customized to fit each customer's data base by the addition of several more attributes.

Once a data base has been partially coded, any user with access to the system can retrieve parts by their attributes rather than their part numbers. But there are other things that become possible by virtue of this code number, and these are some of the real benefits of Group Technology I want to discuss.

Manufacturing applications

The application of Group Technology principles to design engineering should be obvious based on the previous discussions. The basic question is, "why create a new part if one already exists to do the job?" But, as

Some companies have said they could have saved half the implementation time of a shop floor control system if they had only standardized on their parts and routings first

we can see from Figure 1, the real beneficiaries of a good design retrieval system reside in the manufacturing area, not engineering. Standardizing designs makes a lot of people very happy, even though they have nothing to do with the design activity. The Japanese recognized this 15 years ago, and look at their manufacturing costs today.

Taking the concept a step further, though, it is not hard to see how a company can progress from standard designs to standard process plans (or operations sheets or routings, depending on your company vernacular). If the same part is going to be made again and again, it only makes sense to build it the same way each time. But suppose your company only makes 5 of these and 20 of those without much repeatability? Can you still standardize? You bet you can—providing you can identify the part families. This is where the code number comes to the rescue once again.

With a system like OIR's MultiCapp, a computer-aided process planning system might enable a planner to look at the backlog of future orders, identify their similar attributes, and make scheduling decisions—not by due date, but by logical groupings of parts to reduce setup and tear-down times. He could also develop standard instructions for whole classes of parts so that the operators out on the shop floor become used to seeing consistent terminology for each operation. This has a tremendous impact on rework and scrap and, of course, quality. The Japanese also understood this aspect some time ago.

Carried to its logical conclusion, Group Technology in manufacturing leads to the formation of work cells. These can be loosely defined as a manufacturing center where a series of operations takes place on the same part (or family of parts). The cell could consist of dissimilar machine tools located in a flow line or a file maintenance system all by itself. The distinguishing characteristic from conventional machining centers is that raw stock enters one end of the cell and finished parts come out the other. Not only are setup times and work-in-process inventory drastically reduced, but quality is significantly improved. Somehow, the Japanese figured this one out, too, when they set up their KanBan lines.

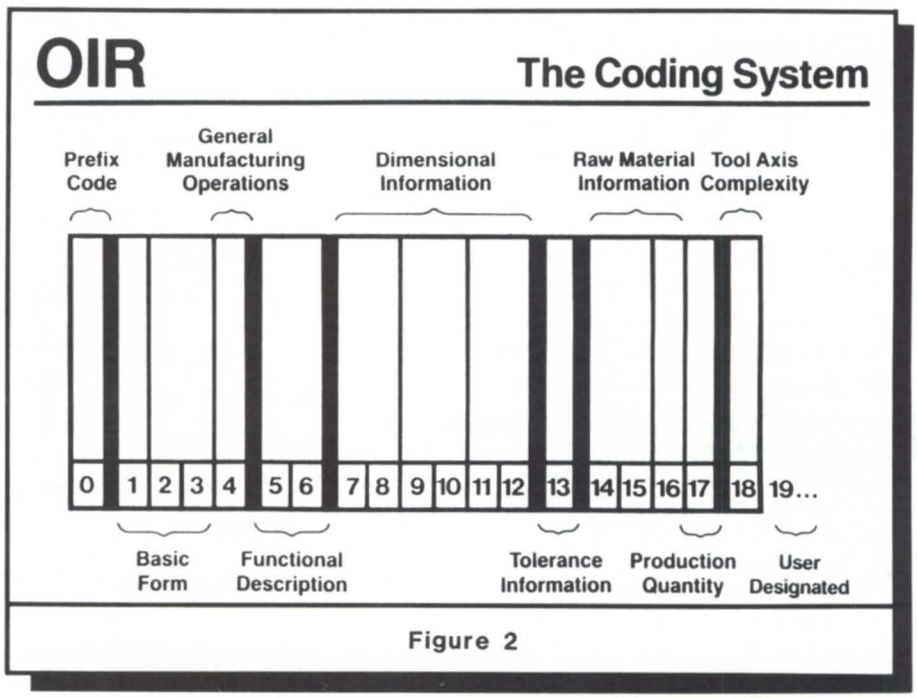

Figure 2

Since a cell is designed with specific part families in mind (identified by their code numbers), it is also possible to create macro tapes for the NC machines so that only a limited amount of variable data must be input. When the design engineers hand down a new part, the process planner simply runs its code number against the data base of previously identified part families to see if there's a match. If there is, bingo! He assigns the part to that work cell and his planning job is over.

Some American companies have said, "We can't worry about GT until we get our MRP system up and running." They can then automate their old routings and add shop floor data collection systems with all kinds of scheduling algorithms based on due dates and other priorities. After about three years—if they're lucky—they get things somewhat under control and look into forming work cells. If they opt for GT, as more and more companies are, they code their parts, identify the families and dedicated machine tools, form the cells, and—you guessed it—throw away all the old routings and scheduling algorithms they spent years implementing. Some companies have said they could have saved half the implementation time of a shop floor control system if they had only standardized on their parts and routings *first*. It is not hard to see why the Japanese implement Group Technology well before their just-in-time scheduling systems.

Benefits

Quantifying the benefits of Group Technology, as with any manufacturing system, is not always easy, but there have been several impartial surveys conducted over the past few

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Circle 1 on reader service card

years that indicate average companies experienced:

- A 55 percent reduction in manufacturing lead time;
- A 17 percent reduction in setup time;
- A 79 percent reduction in average batch travel distance;
- A 61 percent *increase* in on-time deliveries;
- A 43 percent reduction in average work-in-progress.

Since these are average benefits, it is to be expected that every individual company will be different, depending on its current level of sophistication.

The benefits of Group Technology have been fairly well documented, yet it seems to be a fledgling concept in the United States. Why? Part of it may be our reluctance to accept the idea of standardization itself because it runs counter to our ingrained self-image as a highly creative and individualistic society. Then again, part of it is undoubtedly due to the fact that many companies simply are not aware that Group Technology software is available today and that it will achieve the benefits we have talked about in a relatively short period, typically one to two years.

Whatever a company's priorities may be—MRP, JIT, CAD/CAM, or that big carrot in the sky, CIM—there is no question that Group Technology belongs up there at the top of the list because it will greatly simplify the always-difficult task of implementing the next system. And it will pay you handsome dividends while you're at it. Δ

Richard H. Ernst is the Eastern region manager for the Organization for Industrial Research (OIR) where he specializes in classification and coding systems, cell formation, and process planning applications. He is currently working closely with a number of batch manufacturing companies in a variety of industries to streamline their production operations using group technology. Contact him at OIR, 240 Bear Hill Road, Waltham, MA 02154; 617/890-4030.

♦ Satellite II, Host II ♦

by Eric Christensen ♦ Special to Focus

Securing and automating terminal operations for Marathon Oil—the sequel is better

In the mid-seventies, oil producers in the Middle East wreaked havoc on Western economies with their embargo. Energy fuels became even more valuable, and controlling the distribution of those fuels became increasingly more important. Marathon Oil company responded by developing its computerized Terminal Security and Automation System, which is still in use today.

By now, the system has several years under its belt. It is used to:

- Control physical access to the product terminals;
- Monitor and record the loading process;
- Automatically produce a bill of lading;
- Improve cash flow.

Truck drivers approaching a Marathon gasoline terminal must identify themselves to the terminal's local computer (called a satellite) before they are allowed to enter. After a driver has pulled into a vacant loading bay, he uses magnetically encoded cards to identify himself, his transport, and the customer who is to receive the product. The satellite computer then decides which of the commodities (regular, lead-free, fuel oil, etc.) the driver is authorized to receive, and allows those pumps to be engaged.

When the transport is finished loading, the satellite prepares a transaction record that details the customer and the amount of each commodity loaded. The satellite initiates a phone call to the host computer in the home office. The host records the transaction and returns a full bill of lading to the satellite. At regular intervals, the host uploads all of its transactions to the mainframe computer via HAMLET (the Hasp-II workstation emulator).

The project began with Motorola 6802 microprocessors at each product terminal, and a pair of Data General C/350s at the home offices. As this equipment became more expensive to maintain and additional capabilities were desired at both the host and satellites, plans were drawn up for the second generation of equipment. Satellite II now employs a pair of Motorola 68000 microprocessors, and Host II is an MV/10000 with an MV/8000-II on standby.

Converting from 16 to 32 bit PL/I

During the conversion from the C/350 to the MV/10000, we decided to migrate from 16 bit PL/I to 32 bit PL/I, instead of continuing to run 16 bit processes. The biggest change was converting system call packets from AOS to AOS/VS format. Since most of the system calls were confined to a library of PL/I subroutines, our job was a lot easier.

Error codes went from 16 to 32 bits, which required some fairly widespread—but trivial—changes.

Other changes included rewriting constructs that were accepted by the 16 bit compiler but not the 32 bit compiler. For example, the expression in a RETURN statement of a function procedure had to be enclosed in parentheses. And BUILTIN functions that require no arguments (such as DATE, TIME, ONCODE, etc.) either had to be explicitly declared as BUILTIN, or they had to appear with "( )" following them (e.g., DATE( )). In addition, INFOS file usage from PL/I, which used to be indicated by the presence of KEYED and SEQUENTIAL in an OPEN statement, now must use the ENVIRONMENT(INFOS) option under 32 bit PL/I.

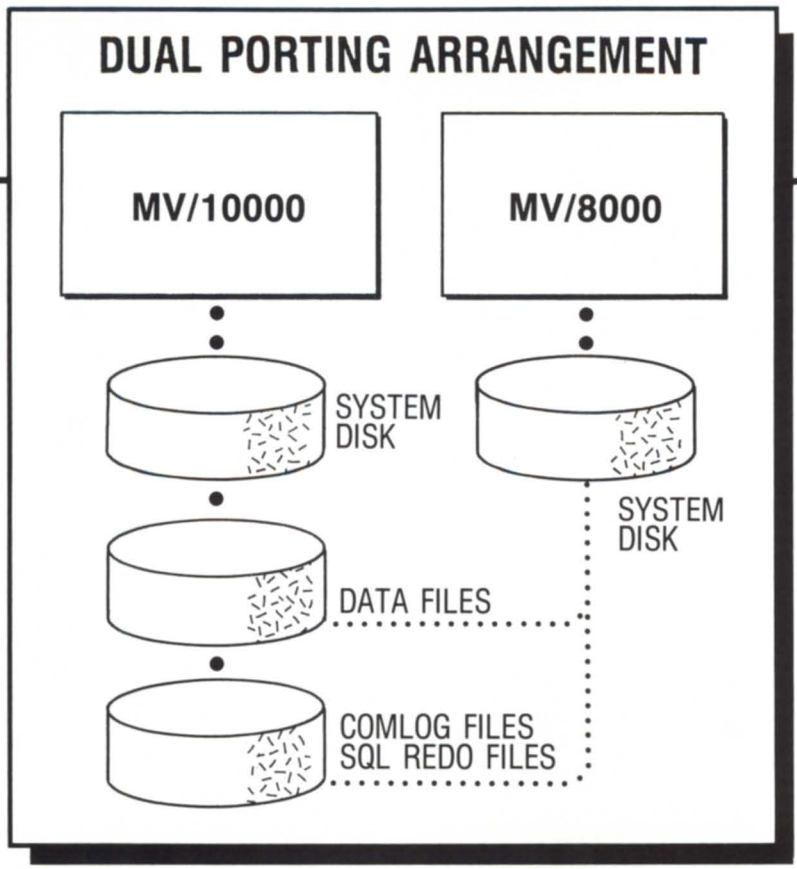
Another change in the error codes involved the length of bitstrings. 16 bit PL/I would allow a bitstring longer than one bit in an IF statement, but 32 bit PL/I would not. This problem was easily circumvented by changing the expression to "bitstring ↑= '0'B".

The 32 bit PL/I manual contains a complete list of the incompatibilities between the 16 and 32 bit compilers; the preceding ones are those we ran into the most often.

The results were well worth the effort. We no longer needed any complicated overlays; the 64 KB address space limitation disappeared, and compilation times dropped dramatically. All of these factors are a help in the development environment.

INFOS to DG/SQL

It proved unnecessary to convert INFOS files into DG/SQL tables as a part of the upgrade. However, we did want to become familiar with SQL, because an upcoming project will use it heavily. Several of our INFOS files could benefit from transactional atomicity (which was not available under



INFOS); these files made natural candidates for conversion to DG/SQL.

DG/SQL has a number of advantages over INFOS. I think one of the nicest is the fully integrated logging and recovery mechanism. If your system goes down, DG/SQL can automatically recover the data base after you come up—with no explicit intervention!

With DG/SQL, you can add and drop fields from records without having to write conversion programs. Indexes are maintained automatically by DG/SQL, so you don't have to bother with them. You can add indexes whenever you want, and your existing programs will take advantage of them.

DG/SQL has a complete set of security mechanisms, so you can grant privileges down to individual fields, if necessary. However, beware: security is enforced only when you are in DG/SQL; if you examine the files from the CLI, you'll find out that they all have access of (gulp) "+,WR".

There are a number of pitfalls in converting to DG/SQL, though. To begin with, the data must be put into normal form (in data base terminology). This is one of the most crucial steps in making a workable data base, and one of the most difficult. The problem is compounded if you've been using INFOS to store disparate record formats in the same file.

Then there's the data manipulation language (DML) that goes in your program. Gone are the familiar reads and writes of INFOS. In their place are SELECT, UPDATE, INSERT, and DELETE. Although they are very powerful, you will find that certain things you do in INFOS have no clear counterpart in DG/SQL (such as relative motion).

And the way DG/SQL arbitrates between multiple users is strictly underwhelming. DG/SQL's internal locking takes place at the page or region level, not the record level. Furthermore, during changes it first gets a shared lock on the page/region and then an exclusive lock, instead of getting an exclusive lock to begin with. These two factors cause much more conflict between DG/SQL users than is necessary—conflict that the user has no direct control over. When conflict occurs, one user's work is undone, and that user must redo the operation. Even something as simple as two users trying to add completely distinct records into a file can cause conflict. This obviously makes no sense at all, and would never happen under INFOS. When this arbitration mechanism is enhanced, DG/SQL will be usable in a multi-user environment.

The INFOS and SQL files reside on one disk, while the COMLOG files and SQL redo files are on another

Communicating with the mainframe

Early in the development of the first host, we realized we needed to be able to transfer files between the Data General machine and the mainframe. This mechanism would be

(continued on page 23)

A magnetic card reader allows the transport operator to identify himself to the computer.

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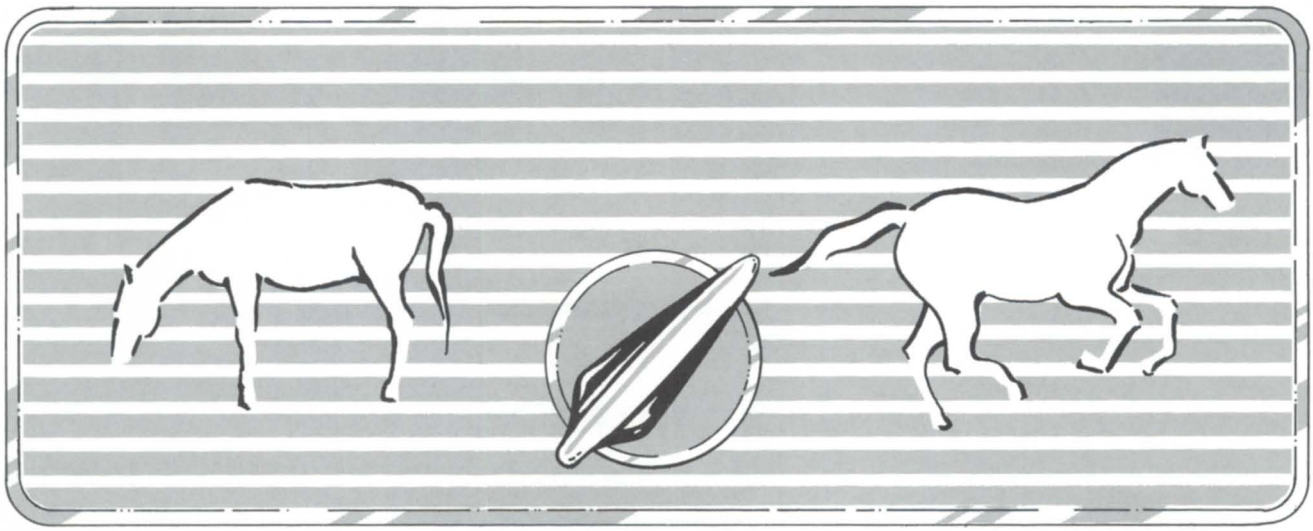

Changing horses

System management in a changing CAD/CAM environment

by Greg Krumrey
Special to Focus

System management in a CAD/CAM environment is, at best, a very complicated process and, at worst, a 60-hour-a-week job. In addition to keeping our MV/10000 up, as system manager for Polster CAD/CAM Services, I spend considerable time writing in-house software, monitoring system performance, and teaching programming classes. My two favorite tools are CLI macros and Fortran 77. I often use these two in combination, having a CLI macro PROC up a Fortran program, and having Fortran programs call CLI macros.

Polster started in CAD/CAM in 1981 with a DEC PDP 11/70 and third-party CAD/CAM software. In December 1984, we upgraded to a Data General MV/4000. At that time we moved from 16 bit CAD/CAM software to a more advanced 32 bit version from the same vendor. A year later we moved up to an MV/10000 and eliminated the PDP 11/70. This article will describe this process and related events.

After the installation of the new software in December 1984, I began the tedious process of "hardening" the system. The new CAD/CAM software was relatively unstable, and errors that seemed to have little meaning appeared with frightening regularity. To make matters worse, rumors abounded of other companies abandoning this new software and falling back to the older, more reliable 16 bit version.

Several of these problems were related to the software's use of AOS/VS features: the software sometimes used SEARCHLISTs to locate a file, and other times used LINKs. It would sometimes locate the wrong file, and other times it would create a new one in the wrong directory. Most of these errors were not documented and had to be discovered by trial and (mostly) error.

I used this general rule: if the filename was always the same, and the file resided in the same directory, then a link was used. If the file could be named anything, or the directory varied, then a searchlist reference was used. These two features work well together; I frequently used links in a directory that was included in a searchlist. This allows an application that uses several "fixed" files in different directories to use one directory as a base of operations. All that application's links exist in this special directory, and only this one directory is needed in the searchlist to make it run.

A correct searchlist would allow a user to use the CAD/CAM package without being in the directory with it. I could create files in my own directory that would supersede the files in the application's directory. Since I had

One well-placed DELETE + in the right directory could send the entire CAD/CAM package right into the Twilight Zone

my own copy, I could then experiment safely as more users came on the system. Also, since the software was self-contained and resided solely in that directory, backups became much easier.

The next step was to modify the CLI macros supplied with the CAD/CAM software. Many dumped the user out in whatever directory the macro last landed in, and often changed the user's searchlist. The result was that users landed in limbo, far from the friendly CLI macros that I had written, and they had to type extra commands to get back to a familiar frame of reference. PUSH and POP commands were added to all these macros so that the user's environment was not changed. As a rule, I added directories to the searchlist using PUSH and SEARCHLIST [!SEARCHLIST] <new directory>, then POPped the addition off later. This allowed me to use a common directory of CLI macros for everyone, while using specialized macros only while in a given application. I used [!PATH] to make sure files existed before bringing up CAD/CAM processes.

Users received errors such as "xxx NOT RUNNING" (where xxx is the name of one of our applications) or "PRINTER QUEUE NOT AVAILABLE" instead of "*ABORT*/ FILE NOT FOUND" or "INFORMATIVE ERROR xxx" along with a huge collection of meaningless numbers. The startup/shutdown macros were cleaned up so that the system could be brought up or down to any point without problems. Users who had never had experience with AOS/VS could safely start up and shut down the system, and I could use the same macros for more complicated operations.

The CAD/CAM software has its own file management software, which I'll call FM for short. FM had a rather irritating feature: each user had to log on with a username and password each time they entered the CAD/CAM environment, even if they were only running PLOT jobs. I didn't want to disable this security, but I found it very annoying to keep identifying myself every time I entered any part of the CAD/CAM package. Fortunately, the software provided a pair of switches that could be applied to the program, which supplied the USERNAME and PASSWORD values. A few edits later, I used [!USER] to give FM my username, set up a special directory containing passwords, and wired it into the same macro.

Each user has OWARE to his own password file, and can update it at will. Also, since this password is used automatically, it can be something random and unique to each user. AOS/VS provided the first level of security while FM added another level without annoying me or the rest of the users.

While FM protected the data files fairly well, the CAD/CAM software itself had been installed with an ACL of +,OWARE. One well-placed DELETE + in the right directory could send the entire CAD/CAM package right into the Twilight Zone. The documentation didn't describe what some of the files were used for, but some of the extensions were obvious: +.PR files were actual programs, +.CLI were the macros mentioned above, and most of the remaining were data/scratch files, which were occasionally documented. A few ACL and PERM commands later, this area was secured. The directory itself was changed to +,RE to allow easy but harmless access to the files.

Everyone was allowed access to CLI, so it was easy for them to get the system resources they needed via CLI macros. However, this made it harder to protect the system. There was also the problem of protecting the users from themselves. A few hours of listing, highlighting, and verifying ACLs on the system plugged most of the holes. Just about everyone found CLI to be friendly enough, and this environment offered relative security without "locking up" the users or the system. I did set up a few "snares" to deter curious students, and couldn't help laughing at a red-faced student sitting at his console while the screen beeped and flashed, "***ACCESS DENIED, USER NOT PRIVILEGED FOR THIS ACTION***".

By approximately a month after the MV/4000 had arrived, we had set up a fairly stable, structured environment. The MV/4000 was running well, but running empty. None of our in-house software, which was residing on the old PDP 11/70, had been moved to the MV/4000. All of our CAD/CAM data also had to be converted.

I began with the most obvious step: getting text files from the old to the new. Our older system sat in its air-conditioned room, cranking out 22,000 BTUs of heat every hour and handling most of the workload. Our shining new MV/4000 sat in what had once been someone's office. A port-to-port cable could send data at a maximum of 9600 baud, and would have taken forever to transfer the data. Buying a network for a one-time project was out of the question. The tape drive was ideal; it was already available, and with a very high transfer rate, even on the 11/70. DEC had documented its version of the ANSI tape standard, and I wrote a program to read and write ANSI tapes in a format that mirrored the 11/70's, and ran almost twice as fast. Fortran 4 programs came across first.

I spent several weeks changing from DEC's Fortran 4 to DG's Fortran 77. (The overall size of the source files dropped by almost 30 percent, even though I had added extensive comments while rewriting these programs). Gradually, the programs that made our 11/70 useful were finding their way onto the MV/4000, where they ran better and much faster. Users began adapting to the new CAD/CAM software as well as AOS/VS, and enjoyed the more advanced features of both.

Next I began the transfer of CAD/CAM drawing files. Initial Graphics Exchange Specification, also known as IGES, was our answer. We had IGES software on both the 11/70 and the MV/4000, but the tape I/O routines were slow and very cumbersome. With a little luck and a lot of patience, I rewrote the command files on the 11/70 to automatically convert files to IGES and offline the entire contents of a directory. Unfortunately, the CLI macros used by IGES for DG tape I/O were actually worse then their counterparts on the 11/70, and I discarded them. Once again, Fortran 77 bailed me out. Since all IGES files are sent as files of 80-character record length with a block size of 800, it was fairly easy to write a program to read the files directly from tape. A subroutine read the GLOBAL section of the IGES files (the equivalent of a file header), and used

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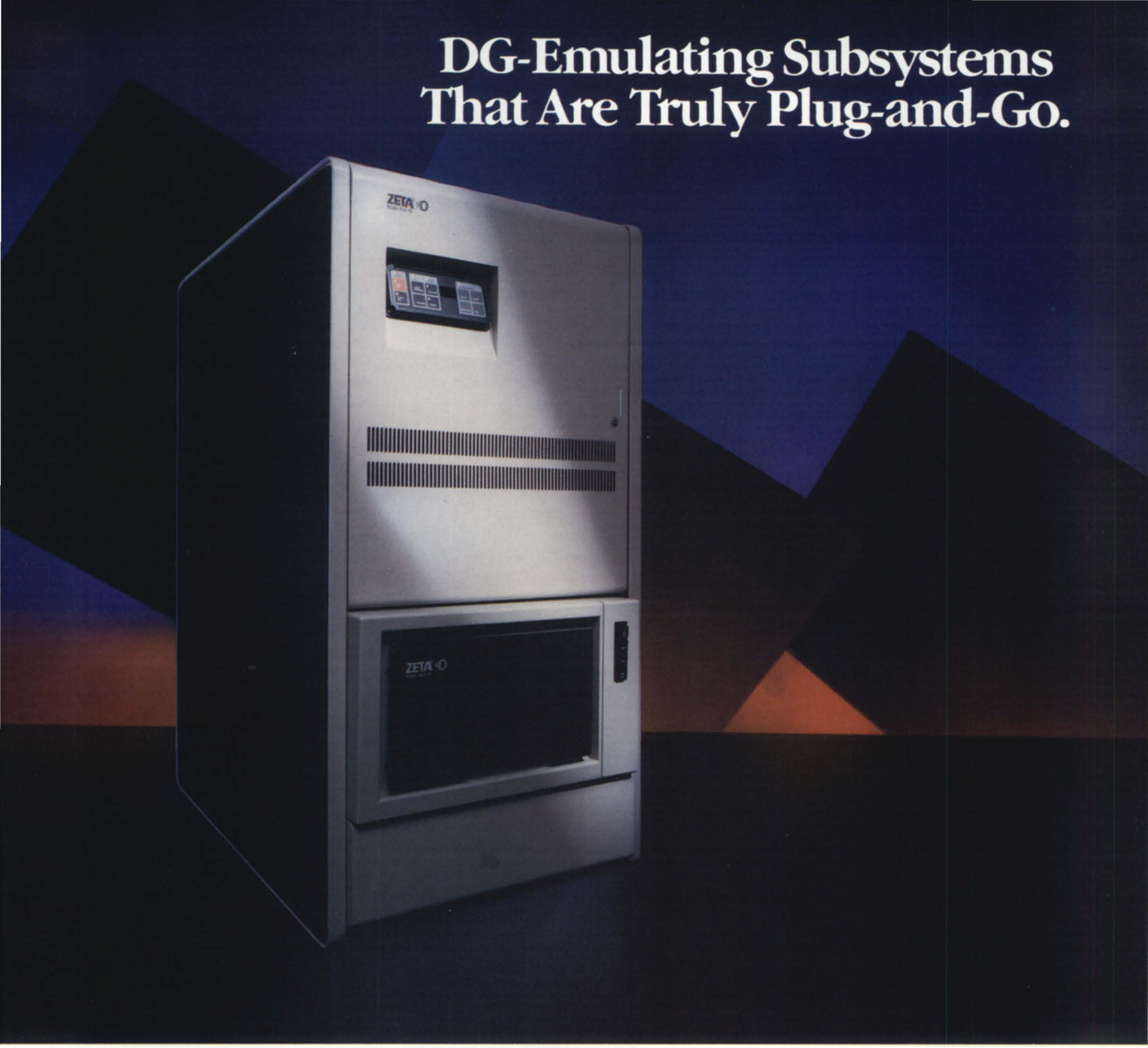

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Circle 46 on reader service card

♦ *(from page 18)*

used to download relevant files onto the host when they were changed at the mainframe, and also to upload satellite transactions for mainframe processing.

HAMLET is used to connect the two. It is configured as a queueing HAMLET; this allows us to submit jobs to the mainframe as easily as queuing a file to print.

Two programs facilitate file transfers, one on the mainframe and one on the Eclipse. On the Eclipse side, the program allows any variable record length file to be formatted into a job suitable for submission to the mainframe. The mainframe program unformats the file, restoring the records to their original size. Both programs can work in reverse, too, so that files can be received from the mainframe.

Because the programs were written to handle arbitrarily shaped files, they have been used for a number of purposes not originally envisioned. For instance, Host II does not have a printer; instead, XLPT output is periodically uploaded to the mainframe for printing on a high-speed printer.

Host availability

Because the terminals are operational 24 hours a day, the host has to meet with stringent uptime demands. And because much of the company's cash flow passes through this system, it is vitally important that no transactions be lost. We have several mechanisms in place to meet these objectives.

The host has a scheduled down time of approximately 10 minutes, late at night, in order to perform backups. The host is equipped with a 6250 BPI tape drive in order to make the backup process as fast as possible. Only the volatile data files are dumped, reducing the time even further. Archival dumps are taken weekly while the system is on-line.

DG/SQL has a number of advantages over INFOS. One of the nicest is the fully integrated logging and recovery mechanism

The INFOS and SQL files reside on one disk, while the COMLOG files and SQL redo files are on another (see figure, p. 18). If the disk containing the main data files is lost, it can be easily reconstructed from the previous backup, running IRECOVER for the INFOS files, and doing a ROLLFORWARD-DATABASE in SQL. If the logging disk is lost, logging can be redirected to the system disk until repairs are made.

The data and logging disks are also dual-ported between the MV/10000 and the MV/8000-II. In the event of a CPU-related failure, processing can be performed by the other machine. This involves running FIXUP from the new machine on the dual-ported disks, and running IRECOVER for INFOS files (SQL takes care of itself). Usually, this can be accomplished in approximately 45 minutes; scheduled switchovers are much quicker. Δ

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(from page 21)

that information to name files while reading from tape.

The IGES conversion package on the DG was also very shaky, so I wrote a program to automatically queue up entire directories for IGES processing. This required a little "hacking" since the IGES processor used a bizarre file-naming convention and would error if the slightest inconsistency was found in the input data.

Once the dust settled, files were in nearly continuous transfer, 24 hours a day, at a rate of 4 IGES tapes/day. During regular hours, only one batch stream was running, but the system would "throttle up" to all four streams after hours. Still more programs monitored the conversion process and reported success/failure status without burning up reams of paper. TURBO IGES was born. 800 files later, it was obsolete.

Still more Fortran programs moved approximately 700 more data files into AOS/VS. These were mostly numerical control tape data files. The conversion was nearly complete. Tape drive problems with the 11/70, as well as various hardware bugs, kept cropping up—it was as if the 11/70 knew what was going on!

We upgraded to an MV/10000 in January 1986, and about 90 percent of the workload shifted to the DG machine. The upgrade went incredibly well, and I didn't have to reload any files since we moved our 354 MB drive from the MV/4000 to the MV/10000.

Since I had previously generated a new system, the newest system fired up without a hitch. I was rather happy since this saved me several hours.

Two months later, the 11/70 was still cranking out 22,000 BTUs of heat every hour, but 99 percent of the workload had been shifted to the MV/4000 and MV/10000. About mid-April, the 11/70 vanished. No kidding! I was out of town and returned to find the climate-controlled room empty. A few weeks later, the MV/10000 moved into the 11/70's former domain—with a lot of room to spare.

The conversion is over, but the real work is just beginning. Many tasks that we used to perform manually can be done much faster under the control of the MV/10000. All we have to do is figure out how. Δ

Greg Krumrey has been at Polster CAD/CAM Services since 1982, and has been system manager since 1984. He has handled custom programming projects for time-sharing customers, taught programming classes, and provided consulting to other users running CAD/CAM software on MV/series machines. He may be reached at Polster CAD/CAM Services, 510 Baxter Road, Suite 10, Ballwin, MO 63011; 314/391-8337.

Benchmarking the MV/7800

Maybe not quite a replacement for the MV/8000, but definitely a good thing

by Tim Maness
Contributing Editor

The just-completed NADGUG meeting was very successful from my point of view. As in past years, I enjoyed meeting people and attending the roundtables and panels. This was the first time my company was an exhibitor, and it gave me a different perspective to spend more time in the exhibit area than in the technical sessions. It was a good experience—the local arrangements were very well done, although about 50 percent less humidity would have been appreciated. I'm already looking forward to the meeting next year in Las Vegas.

The rumor I reported last month was correct—there is indeed a one-board MV/ machine. In fact, the announcement came just two days after I had submitted my last article. The new machine is the MV/7800, DG's first single-board implementation of the MV/ architecture. The 15-inch x 15-inch board has the same performance and twice the memory as the original 16-board Eclipse MV/8000 system. The MV/7800 was designed to replace the MV/4000 and MV/8000, and to allow upgrades of Nova and Eclipse

How good a deal is it?

There was something very different about the way NADGUG members responded to the MV/7800 on display at Conference 86—something that went beyond the usual interest in a new processor. Maybe it was the fact that the MV/7800 seems to provide an attractive migration path for users of older systems, or maybe it was the presence of a *blue* cabinet in the DG exhibit area. In any case, companies like Zetaco and Spectra Logic were expecting to sell a lot of disk subsystems to users who are upgrading to an MV/7800, and system suppliers were pleased by the lower prices they will be able to offer their customers.

There was a general feeling that DG had done something very good for existing customers—and perhaps a suspicion that the company might have underestimated the impact of the new machine.

So just how good a deal *is* the MV/7800? *Focus* recently put that question to Paul Keyes, president of Computer Engineering Associates, who had just put five of the new machines out on quote. "It's probably the best step in getting 16 bit users to upgrade that DG has ever made," he said. So it's a good deal, but *how* good a deal it is depends on what the customer had to start with. "You have to look at each situation to see if it would be a bargain."

While the MV/7800 dramatically cuts the hardware cost of upgrading to a 32 bit system, the higher costs of 32 bit software licenses will still be a deterrent for some users. "I don't think you'll see many people putting CEO on the MV/7800, because the software would cost more than the machine," Keyes said. "We've quoted these machines into places where they're running applications with lower software costs."

Assuming that software costs don't present a major obstacle, quite a few questions about the upgrade remain. In many cases, the packaged system with 4 MB, power supply, cabinet, and AOS/VS license would make the most sense. Priced at $27,550, it offers 32 bit power and good expandability at a reasonable price. However, users who already had a Nova 4, Eclipse S/120, S/140, or S/280, or an MV/4000 *could* save more, depending on what other equipment they have on site.

Some users have wondered whether it would be cost-effective to buy a used CPU and then upgrade it. Some even speculated that the used prices for older systems would go up as savvy buyers chose this upgrade path.

"You'd need a good source of very cheap hardware to make assembly from scratch work out," Keyes said. He cited a hypothetical user who spent $8,000 on a Nova 4 with 25 MB disk drive and ATI-16 communications board. The CPU upgrade on the Nova would cost only $11,200 to get an MV/7800 with 2 MB, but upgrading the disk to a 73 MB BMC subsystem would cost $6,900, and upgrading the ATI-16 to an IAC-16 would add another $5,150. Also, if the user needed more than two IACs, there would be the additional expense of an expansion chassis.

However, a wise buyer who got a good price on an older system with lots of peripheral equipment could come out ahead. By breaking up the system and selling the peripherals at a good price, then upgrading what was left, the user could get a very inexpensive upgrade. Keyes didn't advise this path for the faint of heart, however. "It's tricky, because you could get stuck with a lot of hardware you can't use."

Another factor to consider is the minimum equipment configuration necessary to get an AOS/VS license for the upgraded system. The cheapest way to meet the MEC would be to buy a 73 MB disk (about $8,000 used) and a 6125 streaming tape drive (about $3,500). An economy-minded buyer could then supplement this minimum system with higher capacity third-party equipment very reasonably.

Finally, Keyes advised users who are contemplating the upgrade to consider the down time involved. Upgrading from an MV/4000 would take only a few hours, because it would require no software changes. Thus, it could be an attractive option for sites that had run out of ports or power but couldn't justify the expense of an MV/10000. However, moving to the MV/7800 from an older RDOS machine could be very time-consuming, because DG has no plans to support RDOS on the MV/7800 at this time. Δ

—G.F.

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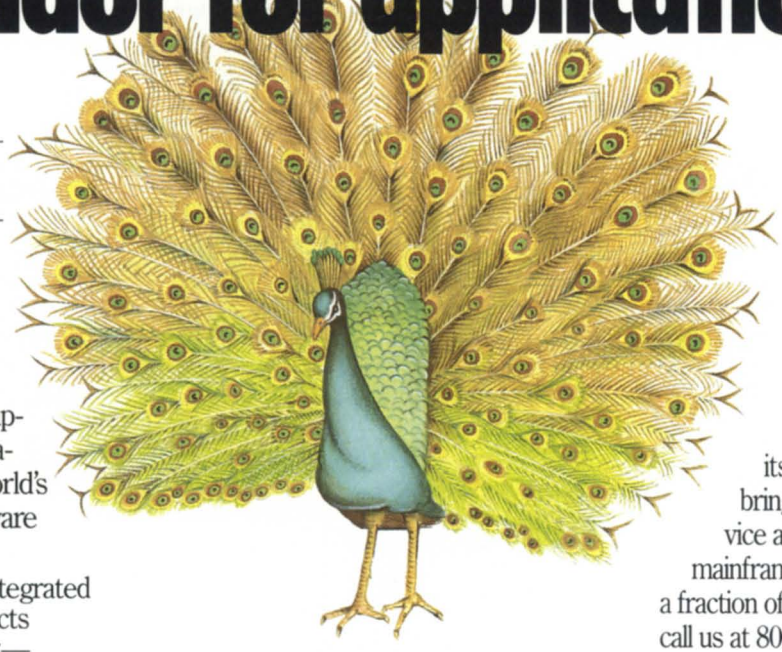

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machines. The board comes with 2 or 4 MB of memory, floating point, data channel, and burst multiplexor. The maintenance prices I saw are very low, ranging from $90 to $120 per month. This reflects the fact that there is very little that can go wrong; there are only about six chips on the board for the CPU.

For the price, which is about $27,550 for the cabinet model (CPU, 4 MB memory, 16 slots, power supply), it appears to be a pretty good deal. In terms of performance, my benchmarks suggest that it isn't quite an MV/8000 replacement—but considering that you could buy two or three MV/7800s for the price of one MV/8000, it is, by definition, a good thing. As an upgrade for the older Eclipse and Nova machines it also appears to be a cost-effective ($10,000 to $15,000) way to migrate from an RDOS or AOS environment to an AOS/VS environment.

I'm still thinking about whether the upgrade for an MV/4000 is a good deal; it does free up slots, and there is a significant decrease in the monthly maintenance. The sales literature says that it will increase the capacity for CEO users about 25 percent. We don't run CEO and I don't have a benchmark that measures this type of load on a system. My initial thought is that it is a pretty even runner with the MV/4000 on most counts. I'm going to keep my MV/4000 and my $17,450 for a while and wait to see where the dust settles.

While at the NADGUG meeting I was able to get a little time on a MV/7800 to try my benchmarks. The machine at the meeting was an upgraded S/140. The old blue chassis with nothing in it but the one new board looked very strange. With the new board, the machine had 4 MB of memory and a floating point processor; it had a 147 MB disk. Figures 1 through 3 show the results of the benchmarks for the /7800 as compared with other DG machines. For details on the benchmark programs, please see my June 1986 article in *Focus* (page 46).

The configurations of the other machines were: MV/2000 DC with 2 MB memory, 70 MB disk; MV/4000 with FP, 2 MB memory, 384 MB disk; MV/6000 without FP, 6 MB memory, 602 MB disk; and MV/8000 with FP, 6 MB memory, 602 MB disk. The disks for all the machines were about 50 percent full, except for the MV/8000, which was about 90 percent. This fact explains the anomaly in the I/O benchmarks.

The first benchmark (Figure 1) tests floating point operations; the first program has a double precision square root and the second does not. The third column of numbers is for the same program doing only integer arithmetic. Unfortunately, one of my programs didn't make it intact to the meeting, so I was unable to get the first number for the /7800 (indicated with an *). All times are given in seconds.

Figure 1: Floating point operations

	W/DSQRT	WO/DSQRT	Integers
MV/8000	7.04	1.65	.640
MV/7800	*	3.91	.795
MV/6000	22.37	7.75	.640
MV/4000	15.66	5.17	.782
MV/2000	12.93	3.22	1.060

The second benchmark (Figure 2) measures I/O. The first column of numbers is for a program that creates a file and fills it with 4,992 blocks of data. The second column contains numbers for the same program, except that the file is already created. The third column of numbers is for a program that reads this file. The process was run first for a file with element size 32, and then repeated with element size 4. The first number is the number of bytes transferred per second and the second number (in parentheses) is the elapsed time in seconds for each test.

The third benchmark tests the speed of paging by filling a large array first in best case order and then in worst case order. The times given are elapsed and CPU times.

The MV/7800 should prove to be a nice addition to the MV/ line. For the money I think it's more exciting than the MV/2000 because you can use "normal" tape and disk drives with it. Too bad it wasn't around a year and a half ago—I could have saved a bundle. Of course, you can't spend too much time thinking about that or you'd never buy any hardware. There's always going to be something that does more and costs less next year.

If anyone from DG is reading this, it sure would be nice to put several MV/7800s in one box—being able to add another 1 MIPS processor to an existing machine would be very exciting.

AOS and AOS/VS SIG

This special interest group deserves your support. If you didn't receive the last newsletter (July 1986), then you probably haven't paid your dues lately. Send $20 to David Novy at 3M Company, 3M Center 235-1D-19, St. Paul, MN 55144. The purpose of the SIG is to provide a lobbying group to work specifically for the interests of those of us who run AOS and AOS/VS. The newsletter provides a quick method of publishing items of interest to members, and there's a library of useful software you can get practically free (for the cost of a tape).

In the group's July newsletter, Dan Boarman discussed a need for performance benchmarks. Developing a set and making them available is a perfect job for the SIG. If you have benchmarks to contribute or would be willing to run benchmarks, contact Dan at Westvaco Corporation, PO Box 1950, Summerville, SC 29484, 803/871-5000 ext. 131.Δ

Tim Maness is president of DMS Systems, Inc., a software development firm specializing in data base management. He can be reached at 1111 Brickyard Road, Salt Lake City, UT 84106; 801/484-3333.

Figure 2: I/O transfer rate and elapsed time

Element size 32

	First Write	Second Write	Read
MV/8000	116,177 (22)	511,180 (5)	511,180 (5)
MV/7800	255,590 (10)	511,180 (5)	511,180 (5)
MV/4000	319,488 (8)	638,976 (4)	638,976 (4)
MV/2000	159,744 (16)	365,129 (7)	365,129 (7)

Element size 4

	First Write	Second Write	Read
MV/8000	38,725 (66)	134,521 (19)	134,521 (19)
MV/7800	62,339 (41)	106,496 (24)	106,496 (24)
MV/4000	67,621 (38)	121,709 (21)	121,709 (21)
MV/2000	28,718 (89)	98,304 (26)	98,304 (26)

Figure 3: Paging speed

Elapsed/CPU times for best case access

	N=50	N=100	N=150	N=200
MV/8000	1/.54	7/4.34	19/14.9	41/35.2
MV/7800	2/.80	7/6.22	22/20.9	51/49.2
MV/4000	2/.96	9/7.44	27/24.9	63/59.1
MV/2000	2/1.1	10/8.53	32/28.6	73/67.6

Elapsed/CPU times for worst case access

	N=50	N=100	N=150	N=200
MV/8000	2/.71	9/5.8	26/21.2	62/55.4
MV/7800	2/1.6	14/13.2	47/45.1	111/107.4
MV/4000	2/1.4	14/12.0	44/41.7	106/99.2
MV/2000	2/1.4	13/11.1	41/37.6	96/89.3

:CONF_86: ROUNDTABLE

Pressing issues and passing fancies from the AOS{/VS} system manager's roundtable

by Brian Johnson
Contributing Editor

This month's column is a completely biased account of the goings-on at the AOS{/VS} system manager's roundtable held on August 14, 1986, at the NADGUG national conference. If you were there and your perception differs from mine, or you see any omissions, please let me know. The notes I took are a little jumbled because I was frantically trying to take them while also serving as moderator, referee, and buttinski.

The panel members representing NADGUG were David Novy of 3M and Mike Travis of the U.S. Forest Service. Representing DG were Jim Hassey (operating systems), Ralph Jordan (languages), Leslie Levitt (documentation), Bill Means (national customer support/Atlanta), and Brian Schimpf (networks/communications).

Audio tapes of the session are available *(see page 37 for a tape order form).*

At the suggestion of one of the users, I tried to use a format somewhat similar to the one used at IBM SHARE meetings, where each issue is rated as "Can't Live Without," "Important," and "Very Nice To Have" by a show of hands. It seemed to help.

:PIPES

Using pipe files for communication between processes was discussed and compared with shared files, IPCs, or ?SIGNL/?WTSIG. The general consensus is that pipes are pretty efficient and are at least on a par with, if not faster than, IPCs.

There was some discussion about the fact that pipes currently don't work with COBOL variable length files. (It's probably an AOS/VS limitation, not a COBOL problem.)

:BACKUP

A recurring issue is the problem of losing the TLA on files when they're backed up, and losing TLM when they are reloaded. Jim Hassey indicated that a solution is coming (rev 9?) as part of the coming new file structure, but details are premature. This topic has been a hot item at previous conferences, and continued to concern the majority of attendees this year.

:RENAME

The ability to RENAME a file or directory from one place in the file structure to another place, instead of having to MOVE the file or directory, came up again this year. About 75 percent of the attendees felt this would be "Very Nice To Have" to avoid unnecessary I/O (and loss of TLA/TLM) when moving stuff around on a disk drive, or when distributing obsolete user directories to new caretakers.

From the responses offered by the DG panel members, I get the impression that this is not currently part of the planned new file structure, but I spotted people taking copious notes. (Hooray!)

:SYSLOG

We discussed the option of logging failed logon attempts with just the attempted usernames/password pairs—and without having to resort to the disk-devouring detailed logging option. Most agreed this would be "Very Nice To Have."

This question also opened a Pandora's Box regarding the general philosophy concerning how SYSLOG is handled. People expressed interest in a SYSLOG/START command that would allow switches for each specific log record type (or perhaps groups) so that managers could tailor logging to their specific needs. Most agreed that this would also be "Very Nice To Have."

:CLI

An enhancement to the CLI that would allow diverting of command output to a "string buffer" was requested. The logic goes like this: add a /S switch to most commands. It would operate like the /S switch on the XEQ command. Then WHO/S would return the information in the string buffer instead of displaying it on the screen or writing it into a /L= file. The string could then be tested using the normal pseudo-macros to control execution of a macro. I pointed out that this is not as simple as it sounds: string variables and string operators (INDEX, LENGTH, SUBSTR, etc.) would then be needed to store, test, and manipulate multiple strings. The net-net would be a CLI very much like the VAX VMS CLI, which has all of the above, plus labels and looping capability.

The DG panel members took notes, but I didn't notice a large quantity of enthusiasm. Not surprising, considering the magnitude of the changes involved. A few years back, DEC yielded to requests by their users' group to add searchlists to VMS, so maybe what goes around, comes around . . .

:HUNGRY

Somebody pointed out that there was a discussion on the NADGUG dial-up bulletin board speculating that AOS/VS system disk space consumption went up on rev 6. No corroboration was apparent among the attendees, but a general discussion ensued of the rising memory and CPU requirements of each new rev. The net-net seemed to be a consensus that progress is rarely free, and that the costs don't appear to be out of line with the benefits of the new features.

:PERFORMANCE

People expressed interest in adding a few simple commands to AOS{/VS} that would give limited resource usage information as part of the product (i.e., not as an extra cost option). The primary need seemed to be some feedback on gross memory consumption (i.e., do I have any extra?), and cache hit rate.

:TOOLS

Interest was also expressed in application software analysis tools (e.g., source code analyzers). Someone pointed out that such products are available from third-party software suppliers.

:PRODUCTS

A majority of attendees felt that some work needs to be done on product organization. Specific suggestions included shipping products as a directory sub-tree with a name that includes the rev number (e.g., COBOL_3.10). The main thrust was to get all the products to "look" the same, with con-

AOS/VS allows template characters in labeled mag tape filenames when DUMPing, but LOAD_II can't deal with them when reloading. Sounds like STR material to me

sistent organization and consistent names for things like release notice files, and make it easy to back-rev by just switching a link or changing a searchlist in case problems arise. Most agreed that this is the kind of organization they don't mind having imposed on them.

:MONITOR

Several comments were made about better (especially less technical and more "cookbook") documentation for the VS Monitor product. Some attendees remarked that there seemed to be a mismatch between the templates being shipped with the product and the function keys actually used.

:MV/2000

There's lots of unhappiness with the MV/2000 media, specifically the lack of interchangeability with the rest of the product line and the poor performance and reliability. It was noted that during the AOS{/VS} roundtable on the previous afternoon, someone from DG had stated that this problem was the absolute top on the list of priorities and that good news would be forthcoming soon in the form of some sort of nine-track solution with read-after-write.

:MISC

For a couple of years in a row now, the attendees have requested full-page replacements instead of "Replace the second sentence on page 3-5 . . ." in the documentation update files shipped with the products. Again, everyone agreed this was reasonable, simple to do, etc. We'll see what happens this time.

Everybody loves the AUTO_PATCH macro and would like to see more along the same line, such as product installation macros to do things like update :ERMES automatically.

For the forty-third year in a row, attendees would like to see a DUMP/LOAD utility that could deal intelligently with tape errors without losing the rest of the dump.

We discussed better/common code generation by the language products. Ralph Jordan indicated that DG is aware of the situation and work is in progress.

Attendees would like to see the return of change bars in the monthly newsletter. Amazingly, I don't remember anyone complaining this year about the overall format.

A plea was made to avoid panicking the system for certain non-tragic failures, especially failed IACs. Notes were taken, heads were nodded, but no promises were made.

AOS/VS allows template characters in labeled mag tape filenames when DUMPing, but LOAD_II can't deal with them when reloading. Sounds like STR material to me.

:DUMP_II

Apparently there are still some problems with DUMP_II/DUMP command line compatibility, especially in the area of complex template lists and/or backslash syntax. I pointed out that it sure would have been nice if template resolution had been moved out of the CLI and into the AGENT so DUMP_II and other programs wouldn't have to struggle to emulate the CLI template facility.

:TUBES

As part of the general discussion on tubes, someone suggested that a facility for the software "Y'ing" a console within AOS{/VS} would be handy when trying to help sort out a remote user's problems. This way the manager could "look over the user's shoulder" without leaving his easy chair (something like the RAC capability, but without the need for hardware).

Also, several users requested a "monitor" mode on future DG tube products. Many third-party tubes—Televideo, for example—have this capability.

I'm not going to say anything about the foreign tube discussion this year: it deserves an entire column, and I'm not the person to write it.

:MSCOPY

Several users mentioned having problems with MSCOPY, but little corroboration was available from the other attendees. Can anyone shed light on this?

:SUMMARY

My impression of this year's AOS{/VS} system manager's roundtable compared with previous years is that there are far fewer "Can't Live Without" issues than in the past, but a few persistent issues still remain, notably in the areas of backup (especially LOAD_II/DUMP_II), garbage collection (TLA/TLM), QA (although the consensus seemed to be that it's getting better!), foreign tube and printer support, and SYSLOG info.

Noticeable by their absence this year were labeled tape issues, Atlanta (!), and major DUMP_II/LOAD_II reliability problems.

:MERCI

My heartfelt thanks go out to the members of the panel, especially the DG members. Their continued willingness to participate in these discussions over the years has resulted in lots of issues disappearing, and I'm sure that it has provided valuable feedback to the development effort.

But most of all, I want to thank the hundreds of users who showed up and took part. They're the ones who really benefit.

:UNRELATED

At the "Meet the editors" session for *Focus*, there was a general consensus that columns of a more technical nature would be welcomed. The columnists present (myself included) expressed skepticism and said they consciously tried not to lapse into heavy technical stuff. How about some feedback using the new *Focus* Q & A facility (tear out the Quick Connect card in this issue), last month's survey of *Focus* readers (page 15 of the September issue), or writing a letter to the editor? I, for one, would welcome some feedback. I've received only a handful of letters and phone calls in the past year (except for the RUNAWAY request deluge). Δ

 Brian Johnson is the president of B.J. Inc., a San Francisco-based consultancy specializing in system auditing, system management, and performance analysis. He can be reached at 109 Minna Street, Suite 215, San Francisco, CA 94105; 415/550-1444, Telex 296544.

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NADGUG roster

ROSTER

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If you would like to join a particular group, notify the person listed as the contact. If you do not see a regional group in your area or a special interest group that would serve you, notify the NADGUG staff in Westboro (617/870-7721) about your interest in seeing a new group start up. If you are aware of any changes or updates that should be made to listed contacts, please notify the NADGUG staff.

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Minimally unique switches/Part=2

Program design with CLI switches and arguments

by John A. Grant
Contributing Editor

(Editor's note: last month the author discussed various models that can be used to design interactive programs. Techniques such as screens, shells, function keys, and menus all require keyboard input. This article—part 2 of 3—covers the design of programs that use CLI switches and arguments to select options.)

/2/A/Why Switches and Arguments?

The most obvious reason to pass filenames to a program as CLI arguments is that you can use the ( ) and < > parentheses as well as the [!FILENAMES] pseudo-macro to generate lists of filenames from minimal keyboard input. If arguments are used, then it also makes good sense to specify program options with CLI switches. For example, it is far easier to use:

```
X MY_PLOT_PROGRAM/COPIES=3
 [!FILE,+XYZ+]
```

than it is to execute the program several times, each time entering the name of the file to be plotted from the keyboard. If an error occurs, the entire command line can be recalled with the CLI SCREENEDIT feature for editing and resubmission. Just try that with a program for which options are selected one at a time with a series of queries! Since the options are all selected and set up with a CLI command line, standard or commonly used invocations of the program can be saved by putting the entire command line in a macro.

In fact, users may use a different macro for each different task without ever knowing they're just running the same program with different switches and arguments. The resulting transparency is a key to writing a good utility program with all of the options or modes of operation activated by switches.

The AOS{/VS} DISPLAY utility is a good example—just consider all of the combinations of switches you can use to create macros to copy tape files, copy entire tapes, convert files from EBCDIC to ASCII, and display files with various output formats. For example, I have a TEXT.CLI macro to display a file in text format:

```
DISPLAY/TEXT/WIDTH=64 %1%
```

There are countless other combinations.

Switches are also an ideal method of specifying and differentiating between global and local program options. Global options are expressed as switches on the program name and local options are implemented as switches on program arguments (perhaps filenames). For example, the /MAP switch on the AOS {/VS} LINK utility is a global (program) option and the /START switch on a filename is a local option.

/2/B/This program is actually a subroutine!

It is natural that the term "argument" is used to refer to CLI arguments to a program as well as to procedure or subroutine arguments. A subroutine receives its parameters from the calling routine via the runtime stack, whereas a utility program can receive its parameters as switches and arguments contained in an IPC message from the CLI or any other program. The best (and my favorite) reason for designing utility programs to access switches and arguments is that they can be treated like subroutines and "called" from other programs.

Here's how it works. When you use a CLI command to execute a program (XEQ, EXECUTE, CHAIN, or PROCESS), the CLI expands all < > parentheses, converts the entire command line to uppercase, removes the XEQ or other command, and replaces all occurrences of white space (tabs and spaces) with a single comma. This is called "CLI format." The CLI then uses the ?PROC or ?CHAIN system call to start up the program, passing it the edited command line as an IPC (inter-process communication) message. The program can then access the IPC message with the ?$GTMES system call to retrieve switches and/or arguments. Although this is commonly referred to as "getting the argument from the CLI command line," it is not specific to the CLI command line; the initial IPC message can be created by any program and "sent" to another program through the ?CHAIN or ?PROC system calls. If the message is in CLI format, then for all intents and purposes, the program will think it was executed from the CLI.

This means that a utility program that has been coded to read switches and arguments can receive its options or filenames from either the CLI or another program via the IPC message. On the other hand, interactive programs can only receive their information from the keyboard. (The input file can also be redirected using the PROCESS/INPUT=filename or XEQ/M commands, but this requires the input file to be created before starting up the program.) Such programs have considerably less potential to be used as utilities to which other programs can swap or chain.

The AOS{/VS} DISPLAY program is a good example of a noninteractive program design; every single option can be specified from the CLI command line. Most importantly, it has a default mode of operation, so the switches are optional (but an argument is mandatory). Such a program can be easily treated like a subroutine; the IPC message that is passed to it via ?PROC contains all of the specifications.

A more practical example involves the use of a program (GETIT) to create a file and a second program (PLOTIT) to plot the same file. Let's assume that GETIT creates an output file of data whose name is complex and isn't known to the user until the program assembles it and tells him. The filename might contain various fields that indicate the type of data, i.e., RAW_URA.400_1200.100_300.TBP means that the file contains raw uranium data, in the energy range 400-1200 keV, from depth 100 to 300 m, as a temporary (T) file of binary (B) data arranged in (z,y) pairs (P). Don't laugh—we create hundreds of similar files like that; it's the only way to keep track of their contents!

When GETIT has finished and has announced the name of the output file, the user

A utility program that has been coded to read switches and arguments can receive its options or filenames from either the CLI or another program via the IPC message

must execute PLOTIT and tell it the name of the file to plot. Look at that filename again—how many tries would it take you to enter it correctly (especially if PLOTIT cleared the previous screen before prompting for the name of the input file)? However, since program GETIT knows the name of the file, why not just swap to PLOTIT with the name of the file in the IPC message? Of course this requires that PLOTIT be designed to get the name of the file to be processed from argument 1 of the command line rather than by prompting.

Extending this idea, consider several such utility programs used sequentially to process a single file: FILTER, PLOTIT, INVERT, PLOTIT, RECIPROCAL, PLOTIT, DECONVOLVE, PLOTIT. Each of these programs requires the name of the input data file. If each program is designed to get the name of the input file from a CLI command line argument, then a driver program can function like a 'shell' and swap to each program, sending it an IPC message that contains the name of the file. It can also start up a program as a server or other parallel process to perform queuing services. The possibilities are endless.

In the example above, the IPC message passed to program PLOTIT by GETIT would be:

```
"PLOTIT,RAW_URA.400_1200.100_300.
 TBP<0>"
```

In practice, PLOTIT might require more information such as number of copies, scale, etc. These can be specified with more arguments and switches in the IPC message. PLOTIT can now be activated not only by macros that contain predefined switch combinations, but also by other programs that call it like a subroutine. This is a true utility program!

Furthermore, when building an IPC message for the second program, the first program can also insert switch text that is copied from the switches which were present when the first program was executed from the CLI. In this way, switches can be transferred from the first program to the second program.

In a future article, I'll present a routine that makes it easy to swap or chain to programs and pass them an initial IPC message of switches and arguments. If you can't wait, drop me a line or call me.

/2/C/Program design

Now that we have looked at many of the possible ways of building interactive programs, how do you choose the best method to implement each feature of the program? I make a list of all of the possible options, grouping them according to frequency of use and complexity. As you group, consider the following:

- Is this option used every time, most of the time or rarely? Infrequently used options are best implemented with switches.
- Is this the type of option or feature that is only meaningful to an expert user? Such an option should not be visible in a menu or prompt to a novice user.
- Is the program always used by novices? Perhaps such a program should not have any switches at all but have everything up front in menus or screens.
- Can this option be expressed simply with a switch, or is it complex enough to require a menu with more description and guidance?
- Is this a binary option (two states: yes/no, on/off, true/false, etc.), or does it have unlimited or multiple variations (such as number of copies to create)? Perhaps a simple query is better than a switch in some circumstances.
- Is this a mandatory feature or is it really an option?
- If this option is implemented as a switch on a program that runs for two hours, is the user

Programs that access the command line arguments to get the filenames to process should be designed to access all arguments sequentially rather than just the first argument

going to be upset if he forgets the switch and has to rerun the program? Perhaps switches should not be used on long-running programs that don't announce their mode of operation.

- Would you prefer that the program run "silently" without screen output or keyboard input (like DISPLAY)?
- Does the option contain any special characters such as ( ), < >, [ ], commas, spaces or tabs that the CLI will intercept if implemented as a switch? For example, "/XYZ=(" will cause a CLI error, and "/FORMAT=(2F6.3,3I8)" will cause CLI command iteration.
- Can the option be specified as a switch without the user knowing about any intermediate results, or will it have to wait until the program starts running?
- Is this option selected once for the duration of the program as it processes each CLI argument (filename) in turn, or is a different value required for each argument? If a different value is required for each filename, then a switch implementation of this option will require that the program be executed once for each filename supplied as argument 1. In this case, it is more efficient to execute the program once, displaying the filename and prompt for the option as each argument is processed.

These considerations should let you to decide which options are to be implemented as switches or arguments and which are to be implemented using interactive techniques.

/2/D/Types of Switches

There are three types of switches that can be implemented: logical (Boolean), numeric, and character (filename). My example will be the AOS{/VS} DISPLAY utility's switches, with which most users should be familiar. Logical switches, which do not accept a value, don't have to be present (i.e., /DECIMAL, /ALL). A numeric switch requires a numeric value (i.e., /FIRST=n, /OBLOCKSIZE=n) but a character switch can have any type of character or numeric value, (it's almost always a filename, i.e., /L<=filename>).

If a character switch has a numeric value, it is returned as a character string that you can then convert to a numeric value. Values for the numeric and character types of switches may or may not be optional; for example, the standard /L switch that appears on almost every DG product can be used with or without a filename.

/2/E/Three Ways to Implement a Debug/Trace Switch

1. Use a logical switch (/DEBUG) to set a logical variable (default: debug=.false.) and insert trace or debug statements of the form:

```
if(debug) write(*,*)''starting phase 3 now''
```

2. Use a numeric switch (/DEBUG=n) to set an integer debug variable (default: idebug=-1 turns debug mode off) to the desired debug level:

```
if(idebug.ge.0) write(*,*)''starting phase 3
 now''
if(idebug.gt.3) write(*,*)''loop index='',i,'' of
 '',n
```

so that the detail of the debugging output increases with higher values of *n*.

3. Use a character switch (/DEBUG<=filename>) to activate debugging and optionally redirect the debugging output:

```
if(/DEBUG is present) then debug=.true.
    if(/DEBUG has a filename value) then
     open(1,file=filename,...)
    else
    open(1,file=''@output'',...)
    end if
else
    debug=.false.
end if
 . . .
if(debug) write(1,*)''starting phase 3''
```

/2/F/Accessing CLI arguments

Programs that access the command line arguments to get the name(s) of the file(s) to

(continued on page 50)

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☐ **37. AOS/VS System Managers' Panel 2**—*Chairs: David Novy, 3M/Brian Johnson, BJ Inc.*

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RDOS dies again!

DG brings RDOS part of the way into the 32 bit world

by Tim Boyer
Contributing Editor

The column normally scheduled for this month has been pre-empted. Please stay tuned for the following special column. In other words, stand back. Tim Boyer is about to get up on his soapbox.

I got back yesterday from the national conference in Orlando. It was a great success—at least from my point of view. Gerry Manning gave one of his usual fascinating ICOBOL lectures, which I'm not going to tell you about because he has his own column in the *other* magazine. The lectures were, as usual, informative, and very well done. I got to meet the *Focus* editors, who weren't nearly as disreputable as I had imagined. The exhibit hall was packed with new technology—I checked out the Dasher 286, a neat little AT clone, and TEO/3D, a three-dimensional CAD/CAM package. I even managed to find time to have a drink or two.

But the high point was when I managed to sneak into the exhibit hall Saturday night, and saw an S/140. Except that I *knew* it wasn't an S/140 inside.

For those of you who haven't heard, DG has just announced the MV/7800. This machine is an upgrade to the MV/4000. But better yet, the CPU is on one board and can be slipped into an S/140 chassis—or even a Nova 4. Yes folks, you can now upgrade your 16 bit processor to one almost twice as fast as an MV/4000. And the price—get this—starts at $10,000. Putting this together with the—well, not the announcement, but the incredibly strong rumor—of DG RDOS for the MV/2000, I was almost certain that we were about to hear about RDOS for the other MV/ processors.

Boy, was I wrong!

Now, I know that this is not an RDOS column per se. I have to apologize to the AOS{/VS} ICOBOL users out there, and promise them that if they'll be patient, I'll have some good news for them. ICOBOL, however, has traditionally been an RDOS product. That's what I'm running under, and that's what I have an interest in preserving.

Anyway, I went to the RDOS roundtable with high hopes. By the way, I ought to mention that the annual RDOS roundtable is also a roundtable for ICOBOL/BBASIC/Fortran 77 and everything else that runs under RDOS. The name is misleading, and we're going to change that next year.

The meeting started out with a long list of new stuff for DG/RDOS. We're getting two new system calls, one of which is MTDIO (which I assume is similar to BBASIC's MTDIO—direct input-output to tape). Core dumps have been put back into DG/RDOS. The CLI has been changed—abbreviations have been added. IMOVE will now handle labeled floppies, which will make them readable by AOS.

One of the best announcements has to be the rewriting of BURST. BURST is now a stand-among full disk backup program. It will run in interactive mode, and will—finally!—actually read the disk when doing a VERIFY. You can now be sure that your backups are good *before* your disk crashes and you discover that you have two months of trash backups. There will even be a manual with an explanation of BURST's cryptic error messages.

SYSGEN will have helps and defaults, and a local switch to edit existing dialogue files. In edit mode, you will be able to add options even if they don't exist in your current SYSGEN dialogue files. In addition, said file can now be edited with any editor. If you've ever tried to edit a SYSGEN dialogue file with CRTEDIT, you've noticed that it doesn't work. That is because SYSGEN puts nulls at the end of every line, and CRTEDIT goes in and strips them out. Certain editors *will* work—from experience, OEDIT, and (shudder) SPEED. But using them isn't very much fun. You'll now be able to use anything.

Notice, however, that none of this is for good ol' straight RDOS. There are no plans for a new revision of RDOS.

The question-and-answer period came next. This wasn't the first question, but it came no later than third—"What about RDOS for the MV/7800?". The answer—there are currently no plans for RDOS an any MV/ machine other than the MV/2000. Marketing says that the demand isn't there.

Now, I don't know for sure, but I'd be willing to bet they came to this conclusion by asking the branch managers how many of their customers were willing to upgrade from an S/140 or a Nova 4 and still run RDOS. The reply was something like, "Gee, not many—in fact, we don't have very many customers with those machines." Mind you, this is sheer speculation. There may have been an indepth survey of Nova and Eclipse users. But I kind of doubt it—anyone going around asking questions like *that* would have had the rumor mills working overtime.

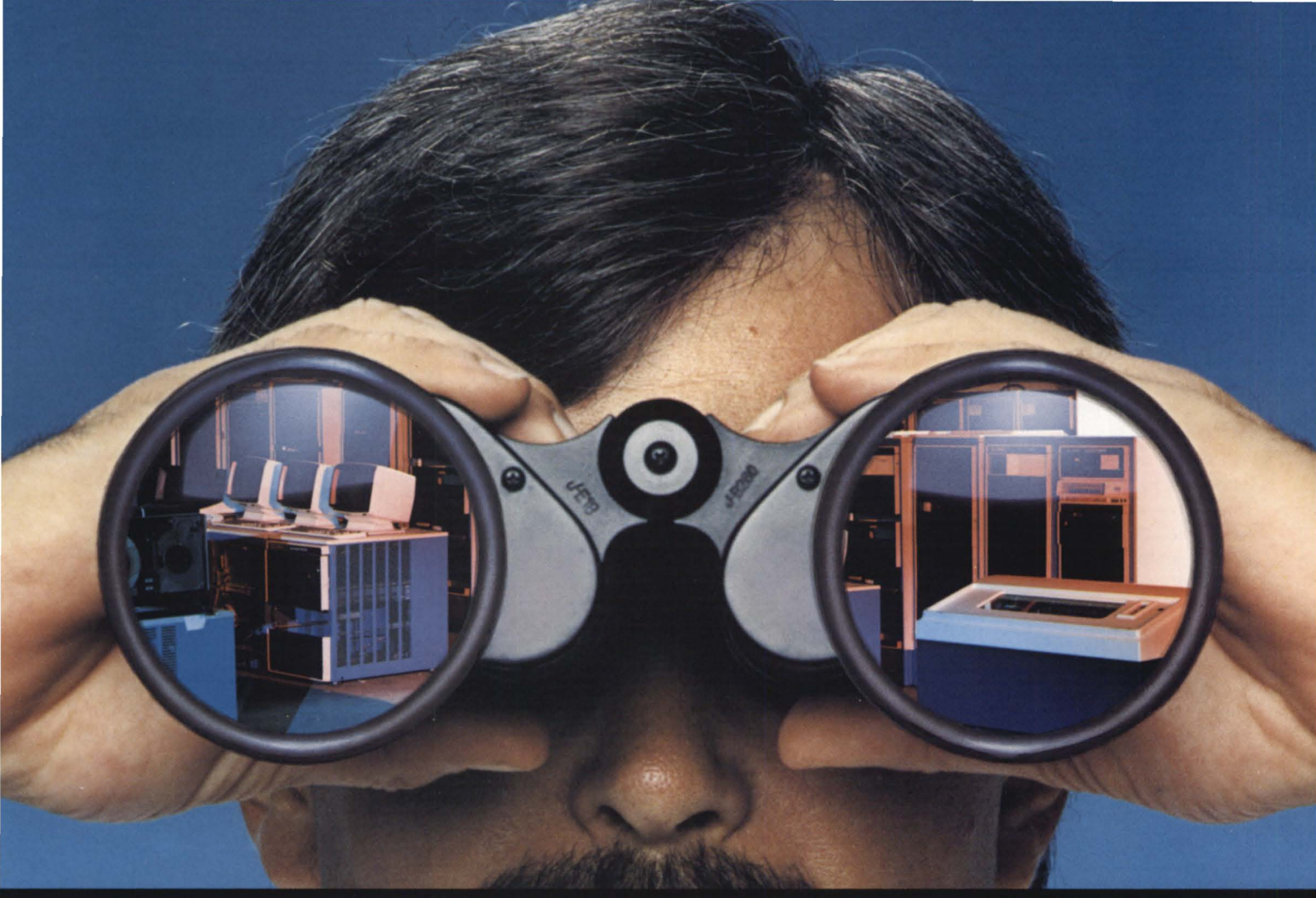
Let me tell you why they didn't turn up many potential upgrades. In the Cleveland area, many of the small machine purchases went like this:

- OEM sells computer to end-user;
- OEM pushes third-party maintenance because it's cheaper;
- OEM goes bankrupt;
- User falls into limbo.

The large purchasers bought their hundreds of Nova 4s in the early seventies, wrote their applications in assembler, did their own hardware and software maintenance, and went into limbo. The only group that DG could keep track of were those users on Software Support.

Hopefully, not many Nova 4s are still on Software Support.

I truly believe—and please, please call me if you can support this statement—that there are thousands of S/140 and Nova 4 users out there who would just *love* to upgrade to an MV/7800—as long as they don't have to rewrite all of their software, or teach their people a whole new operating system, or, for



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This is my plea to Data General: keep RDOS alive and moving. Move it to the 32 bit machines, and give us an upgrade path

that matter, learn a whole new operating system themselves. I especially would like to hear from OEMs—do you really want to teach your ICOBOL and BBASIC customers AOS/VS?

I don't believe I'd have any problem learning AOS/VS. I've hung around the users' group for so long that I feel I know AOS intimately—there are never many RDOS conversations at the conference. I could rewrite my assembler and Fortran routines, and the ICOBOL conversion wouldn't be any problem. One of these days, when I need to, I'll make the switch.

And that's the point. It'll be when I *need* to, or when I *want* to, not when DG says I should. I wouldn't stand still for anyone to tell me that COBOL is obsolete and that I have to switch to C. I feel the same way about my operating system. RDOS is small, fast, efficient, and easy to learn. It does what I need. It would probably be a good career move to switch to AOS/VS, but if I were worried about my career, instead of my company's health, I would have bought something Blue in the first place.

This is my plea to Data General: keep RDOS alive and moving. Move it to the 32 bit machines, and give us an upgrade path. Three years ago, you turned some of your biggest detractors into your biggest fans by coming up with ICOBOL and RDOS 7.00. Your decision to upgrade DG/RDOS and not RDOS, and to put RDOS on the MV/2000 and not on the obvious S/140 and Nova upgrade path, is a step backwards.

I need a stable product that I know will be around for a while. If you definitely will *not* make these upgrades, I need to know now. Either support it—and make a lot of us happy—or drop it—and we'll figure out something to do. Much as I hope you choose the former, what I need most of all is a clear statement on the future of the product.

OK, I feel better now. Periodically, I have to go on one of these tirades. Usually, it occurs at the national conference at three in the morning with someone from marketing and me yelling at each other. I'm getting too old for that.

Anyway, AOS/VS users, thanks for being patient. Here are your goodies—ICOBOL for AOS/VS has been rewritten in 32 bit assembler. This means that your maximum program size will go up to 128 KB, and, with the 16-program CALL limit, a total of 2 MB. You'll also be able to do calls to other languages. Need a SINE/COSINE routine? Don't bother writing it in ICOBOL—do a call to a PL/I program.

In other news, it appears that we will be getting a new bulletin board. Data General's Online Information Service has offered us space beside them on the CompuServe network, and NADGUG has decided to give it a try. There will be sections for the special interest groups, just like on the current RDS bulletin board. Don't stop calling California, though—both boards will be active for a while. I'll give you more information on the OIS board—just as soon as I get it myself.

Well, enough of the righteous indignation. Next month, I'll try to get you that DISCOS review that I promised last month. Meanwhile, I need to get some statistics from you RDOS people. Write, call, or leave a message on the bulletin board—we need to convince some marketing people that we're really out here! Δ

Tim Boyer is EDP manager at Denman Rubber Manufacturing Company and president of the Northern Ohio Data General User's Association. He may be reached at P.O. Box 951, Warren, OH 44482; 216/898-2711 or on the NADGUG bulletin board at 415/924-3652.

It is important to keep in mind that upgrading the CPU is not the only cost in putting in an MV/7800. You can expect to spend much more on all the other parts you'll need

Conference goodies

BBASIC users come away from Conference 86 with several nice surprises

by George Henne
Contributing Editor

I've just gotten back from the NADGUG conference in Orlando—it was a smoothly run success from start to finish. Users of every conceivable configuration and application of Data General systems spent three days attending sessions and trading information. While they were heavily outnumbered by CEO users on large MV/ mainframes, a devoted corps of Business BASIC users made their presence known.

The Business BASIC Special Interest Group (BBSIG) held its annual meeting during the conference. This group is unique: while its actual numbers may be small, it represents thousands of DG users because many of its members are system suppliers.

Mark Strickland is the current president of the SIG. The group decided that there was no need to collect additional dues; however, a new member fee of $10 will continue to be charged.

There was some discussion as to the current objectives of the group. Attendees felt that Data General has done a pretty good job in resolving the outstanding product issues—good enough, in fact, that we couldn't think of a lot of things to put pressure on DG for.

On the other hand, attendees felt the group would have a useful purpose as a forum for sharing information on Business BASIC. Toward this end, a couple of new projects have been initiated.

First, a "Goodies Library" will be established. Members who have useful routines, programs, etc., are encouraged to send them to the library on 1600 BPI tape. Please send these tapes to Bob Busick, c/o OHIONET, 1500 West Lane Ave., Columbus, OH 43221.

Any BBSIG member who sends in a standard mag tape and an envelope with return address and sufficient postage will get a copy of the library. I understand that tapes sent in without postage and address will be treated as donations to Bob's personal collection.

Second, a user directory will be established. It will show each member's configuration, list all hardware and software in use, and include contact names and phone numbers. The listing will be given to all BBSIG members. It will be useful to any member who needs a particular application or who wants to interface to a new piece of equipment. Members can find out who else is already doing something similar and compare notes.

If you would like to become a member of the BBSIG, please send details of your installation and $10 (payable to the Business BASIC Special Interest Group) to Mark Strickland, c/o Evans Paints, Inc., P.O. Box 4098, Roanoke, VA 24015.

At the conference, Data General released more information on the upcoming RDOS for 32 bit machines. Called MV/RDOS, it is definitely not a 32 bit RDOS. The code is not being rewritten to take advantage of the multiple megabytes of memory on MV/ machines, add more grounds, or add lots of functionality.

The objective of MV/RDOS is to allow users of RDOS on 16 bit machines to run their applications with little or no change on the MV/2000 DC. There are no current plans to move it to other machines in the MV/ line. The developers explained that it was difficult enough to put in the necessary drivers and other related code to handle the peripherals on the MV/2000 DC, and that it would be a huge effort to add all the rest of the devices AOS/VS supports across its entire product line.

Still, the fact that RDOS will run on MV/ machines at all is pretty amazing. Three years ago, I wouldn't have given it a chance. It will certainly give many users of RDOS (especially the systems suppliers) a place to move to as the 16 bit machines get less cost-competitive.

However, since the MV/2000 DC has a limit of 24 users, I don't think everyone will be satisfied: there are a lot of people out there running more than 24 devices on their systems and this announcement does little to help them.

Some sort of RDOS for 32 bit machines has been anticipated for some time. What surprised me is that Data General has created versions of both Business BASIC and ICOBOL for MV/RDOS. These products are already extremely successful under AOS/VS. In Business BASIC's case at least, it's much nicer under the big operating system. Why did they go to the trouble of moving it to MV/RDOS?

Remember the good things about RDOS. It's simple, fast, and reliable. Support is easy; there's nothing complex to go wrong. Since it doesn't have 90 percent of the features of AOS/VS, it doesn't require much effort for the end-user to learn and use it successfully. It's appealing for many of the same reasons that made the Volkswagen Beetle a bestseller year after year.

When it came to Business BASIC, Data General had several large customers who

RDOS BBASIC has always been unique in having its own terminal drivers

didn't want to have the additional support overhead of AOS/VS for themselves and their end-users. What they wanted was a cost-competitive machine that worked just like 16 bit Novas and Eclipses. It was easier for DG to create an MV/RDOS than to design new cost-competitive 16 bit machines.

What is going to be different about BBASIC under MV/RDOS? Not much, as far as I can find out at this point. The main thing that had to be done was to change how terminal I/O is handled.

RDOS Business BASIC has always been unique in having its own terminal drivers. When BBASIC was first written, the RDOS terminal drivers weren't good enough to meet the needs of the language, so special routines were added. As new devices were added to the 16 bit world, it was always easier to modify the code already in place than to rip it all out and start using the RDOS drivers.

Business BASIC under AOS and AOS/VS has always used the operating system to do its terminal I/O. This was necessitated in part by the more complex intelligent interfaces, but it also made sense—why should there be code to do the same thing in both the language and the operating system?

With Business BASIC under MV/RDOS, the drivers move into the operating system. This should have a side benefit: it will be easier to manage systems where BBASIC is using some of the ports while another process in the other ground is managing others. A possible problem is that it might be more difficult to connect foreign terminals.

Another point of interest to BBASIC users at the show was the unveiling of Tremco's interface from BBASIC to CEO. Tremco is based in Orem, Utah. Originally developed for use in the legal environment with the CLO package from CMS in Tallahassee, the interface can probably be adapted to other applications. It makes use of the CEO Toolkit to get at the CEO status line so you can interactively see messages as they come in.

It also allows you to automatically insert reminders into CEO from your applications. For example, you could have the system remind you that a certain function hasn't been performed as part of month end, or that a customer hasn't paid his bill on time.

To make full use of the CEO status line and the interrupt key in your applications, you'll probably have to do a lot of work. Your program will have to detect that the interrupt key has been hit, then SWAP to the CEO menu. On exiting CEO, you will have to restore your own screen. This could be difficult if you do not keep track of everything

you're currently displaying. There is no way of automatically "remembering" everything that was on the screen when the interrupt key was hit.

I think that if you want to make full use of this level of integration, you have to design it into your application right from the beginning. It would be almost impossible to add later. On the other hand, certain parts could certainly be used by almost any system.

Finally, Data General had an MV/7800 on display in their booth. I had thought the MV/2000 DC would be the most significant development to the BBASIC community this year. It now seems the MV/7800 will be even more important.

The MV/7800 delivers performance roughly between that of the MV/4000 and MV/8000, but for a price less than the MV/4000. In its simplest configuration, it comes on a single board with 2 megabytes of memory. It can also be ordered with 4 megabytes on board, and can have up to 14 megabytes. For most BBASIC users, just the 2 or 4 megs should be enough, unless other applications are also running on the machine.

The most important thing about the /7800 is not how it can be purchased as a part of a new system, but rather its ability to be used as an upgrade to existing systems. It will work in the chassis of existing NOVA 4s, S/120s, and S/140s, resulting in a stunning increase in performance. The price of the CPU upgrade is really quite inexpensive also. I predict the resale value of these chassis will go up considerably as a result!

On the other hand, it is important to keep in mind that upgrading the CPU is not the only cost in putting in a /7800.The price of the CPU includes an AOS/VS license, but you'll need software licenses for your other products as well. Intelligent multiplexors will be needed to replace your ALMs, ULMs, and AMIs. Some type of battery backup is essential. In many cases, you will need to upgrade your disk drives. And programmed I/O printers will not work under AOS/VS. You can expect to spend much more on all the other parts you'll need than on the new CPU itself.

Still, Data General has done a tremendous job in giving us this latest upgrade, which will certainly protect our equipment investment (and our customers'). Δ

As vice president of MICOM Computer Systems, George Henne has worked with Business BASIC users for nearly a decade. Send questions or comments to him at 575 Madison Ave., Suite 1006, New York, NY 10022; 416/445-4823.

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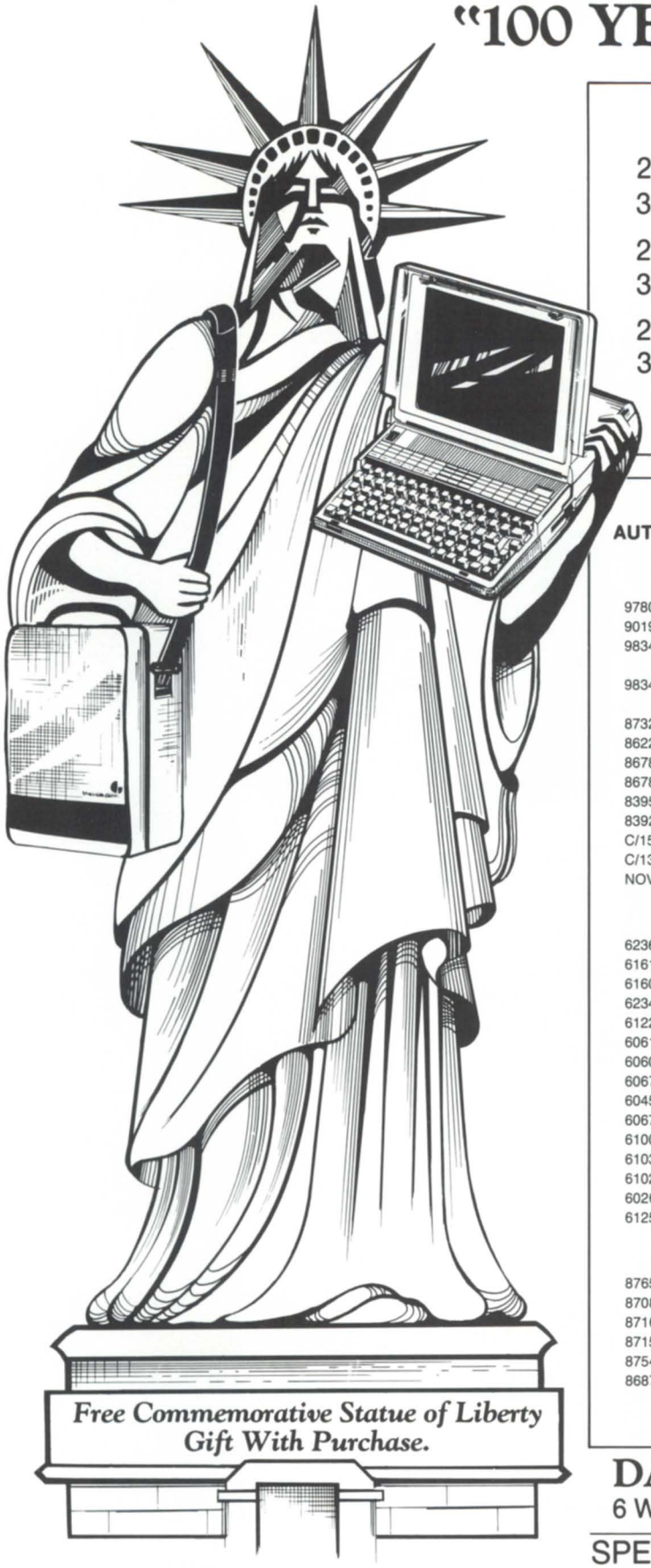

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WR/L=Day__of__week

Conference miscellany, and a macro for all seasons

by Jim Siegman
Contributing Editor

I just got home from the conference in Orlando—it was great. There was a record number of speakers and sessions, and my only regret is that I wasn't able to attend all of them.

■

The AOS/VS roundtable was extremely lively this year, because a number of issues near and dear to the users were raised. The issue that provoked the most discussion was Data General's position on ANSI standard terminal support (or more precisely, the lack thereof). However, one of the exhibitors at the conference has a product that may be able to solve that problem, the PCT-100 Programmable Communications Translator from Method Systems Incorporated.

Their brochure advertises a number of applications including code converters and terminal emulation. From the sound of it, this product could easily be programmed to sit in front of a foreign terminal, watch the data from the DG host, and translate the terminal control characters into something the foreign terminal can deal with. Likewise, it could take the code sequences generated by the function keys on the foreign terminal and translate them into DG function key sequences. If any of you are using it, I'd like to hear from you about your application and how well it's working.

■

Another very useful session was the one by Data General's Douglas Wood on the new 32-bit EXEC. DG has again kept the product upwardly compatible—most or all of your old EXEC interface can be used without modification. The only major exception to this occurs if you are using IPC calls in assembler to EXEC. In response to pleas from users, the new EXEC has been redesigned internally to relax most of the old limits. You can now have 10 batch input queues feeding as many as 100 batch streams instead of the previous limits of 1 and 4. However, Wood warned that there "might" be an impact on performance for interactive users.

Another new feature is dear to my heart because it gave me even more than I asked for on my STR. Not only is there a QMODIFY command for the CLI, but there is also a CX MODIFY command in EXEC to modify jobs already queued. (Actually, the CLI command couldn't have been implemented without the functionality also existing in EXEC.) Although not all of the details were available at the conference, you will be able to adjust priorities, number of copies, start/end pages, and the like without requeueing a job. Things like moving a job from one queue to another won't be allowed at this time. This is all coming in rev 7.5+ of AOS/VS, which some of you might have by the time you see this.

■

Enough on the conference. Some NADGUG members have sent me a few macros that I want to present in this column. The following is a rather useful algorithm known as Zeller's Congruence (credit given to James Reagon, "Days and Dates," in *Computers in Mathematics: A Sourcebook of Ideas*, David Ahl, editor, Creative Computing Press, 1979). This algorithm produces a number from 0 to 6 that corresponds to Sunday through Saturday when given four numbers as input: the month (1-12), the day (1-31), the year (0-99), and the century (I only tried 19). In BASIC notation, it looks something like this:

DOW = (ABS(2.6m − .2) + d + y + INT(d/4) + INT(c/4) − 2c) mod 7

By an interesting coincidence, Lynn Lively sent a set of macros that runs in CLI and performs a variant of this routine (since the CLI can only deal with integers) to figure out the day of the week and store it in a file where it can be used all day. His primary use of the day of the week is to drive his backup macros for file selection.

The macros to implement this are listed below. There is one macro (called DOW.INSTALL) to set up the parameter files used by the rest of the macros. The main macro is called DOW.CLI; it uses a number of shorter macros. Lynn warns that the macro does run quite slowly; he suggests running it as part of your UP macro (I would proc a son CLI that would do this, then shut down) since it can take a minute or more on some systems to run to completion.

If you have any questions or comments about these macros, contact Lynn Lively at Gulf Coast Systems in Houston, Texas. The daytime voice phone is 713/681-2308 or you can call their BBS (300 or 1200) at 713/681-9629 from 1800 to 0800 (That's nighttime for those of you that ignore numbers and just skim the text). I did make some modifications to the macros, mostly just rewording some of the comments.

DOW.INSTALL.CLI

```
PUSH ; PROMPT POP
   DIR :MACROS
   DEL/2=IGNORE MO.-.NUM.DAT
   WR/L=MO.(JAN FEB MAR APR MAY JUN).DAT (01 02 03 04 05 06)
   WR/L=MO.(JUL AUG SEP OCT NOV DEC).DAT (07 08 09 10 11 12)
   DEL__NL ([!FILE MO.-.NUM.DAT])
   DEL/2=IGNORE DAY.-.LIT.DAT
   WR/L=DAY.(1 2 3 4 5 6 7).LIT.DAT &
   (SUN MON TUES WEDNES THURS FRI SATUR)DAY
   DEL__NL ([!FILE DAY.-.LIT.DAT])
POP
```

DOW.CLI

```
PUSH ; PROMPT POP
   DIR :MACROS
   DEL/2=IG DA.NUM.TM MO.LIT.TM
   GET.STR/L=DA.NUM.TM 1 2 [!EQ,%1%,][!DATE][!ELSE]%1%[!END]
   GET.STR/L=MO.LIT.TM 4 6 [!EQ,%1%,][!DATE][!ELSE]%1%[!END]
   GET.STR 8 9 [!EQ,%1%,][!DATE][!ELSE]%1%[!END]
   DEL/2=IG [!PATH,YR.NUM.TM]
   WR/L=YR.NUM.TM
   DEL__NL YR.NUM.TM
   DEL/2=IGNORE [!PATH,MO.NUM.TM]
   COPY MO.NUM.TM MO.[MO.LIT.TM].NUM.DAT
   DEL__NL MO.NUM.TM
   DIV 100 [MO.NUM.TM]
   PLUS 60
```

```
DIV 100
VAR0 [!VAR9]
MINUS [!VAR0] [YR.NUM.TM]
VAR1 [!VAR9]
MULT 12 [!VAR0]
PLUS [MO.NUM.TM]
VAR0 [!VAR9]
DIV [!VAR1] 400
VAR2 [!VAR9]
DIV [!VAR1] 100
VAR3 [!VAR9]
MULT 5 [!VAR1]
DIV 4
VAR4 [!VAR9]
PLUS 1 [!VAR0]
MULT 13
DIV 5
PLUS [!VAR4]
MINUS [!VAR3]
PLUS [!VAR2]
PLUS [!DA.NUM.TM]
MINUS 1
VAR5 [!VAR9]
DIV 7
MULT 7
   MINUS [!VAR9] [!VAR5]
   PLUS 1
   STRING [DAY.[!VAR9].LIT.DAT]
   DEL/2=IGNORE ([!PATH,DOW.LIT.TM] [!PATH,DOW.NUM.TM])
   WRITE/L=DOW.LIT.TM [!STRING]
   WRITE/L=DOW.NUM.TM [!VAR9]
   DEL__NL DOW.(LIT NUM).TM
POP
```

DEL__NL.CLI

```
X SPEED/I=DEL__NL.SPD.TXT %1%
```

DEL__NL.SPD.TXT

To create this file, dir to macros and type this:

```
   X SPEED DEL__NL.SPD.TXT
   @I/<C^J$$;>FUH/^D
   4I^D
   FUH^D
```

This should create the file. Note that $ means <ESCAPE>, ^J is <NEWLINE>, and ^D is <CONTROL-D>.

PLUS.CLI

```
COMM PLUS              !var9 = !Var9 + !var8
COMM PLUS <1>          !var9 = !var9 + <1>!var8
COMM PLUS <1> <2>      !var9 = <2>!var9 + <1>!var8
var9/l=@null %2%
var8/l=@null %1%
var9 [!uadd,[!var9],[!var8]]
```

```
MINUS.CLI
COMM MINUS              !var9 = !Var9 - !var8
COMM MINUS <1>          !var9 = !var9 - <1>!var8
COMM MINUS <1> <2> !var9 = <2>!var9 - <1>!var8
var9/l=@null %2%
var8/l=@null %1%
var9 [!usub,[!var9],[!var8]]
MULT.CLI
COMM MULT               !var9 = !Var9 * !var8
COMM MULT <1>           !var9 = !var9 * <1>!var8
COMM MULT <1> <2>  !var9 = <2>!var9 * <1>!var8
var9/l=@null %2%
var8/l=@null %1%
var9 [!udiv,[!var9],[!var8]]
DIV.CLI
COMM DIV                !var9 = !Var9 / !var8
COMM DIV <1>            !var9 = !var9 / <1>!var8
COMM DIV <1> <2>     !var9 = <2>!var9 / <1>!var8
[!neq,%1%,]
   [!neq,%2%,]
      var8 %2%
      var9 %1%
   [!else]
      var8 %1%
   [!end]
[!end]
var9 [!udiv,[!var9],[!var8]]
GET.STR.CLI
COMM—GET.STR <ARG1> <ARG2> <CHARSTRING>
COMM            Returns the <arg1> through <arg2> of <char>
COMM            in !string or the/l= listfile
COMM—GET.STR <arg1> <charstring>
COMM            returns the <arg1> through length of <charstring>
COMM            in !string or the listfile
COMM
GET.STR.0%0/% %-%
GET.STR.0.CLI
PUSH ; PROMPT POP
   GET.STR.1%0/% %-% END-ARGS
GET.STR.1.CLI
[!EQ,%3%,END-ARGS]
   VAR7 %1%
   PLUS 0 0
   GET.STR.2%0/%/END=LEN [!EXPLODE %2%]
[!END]
[!EQ,%4%,END-ARGS]
   VAR7 %1%
   PLUS 0 0
   GET.STR.2%0/%/END=%2% [!EXPLODE %3%]
[!END]
```

GET.STR.2.CLI

```
PLUS 1
[!UNE,[!VAR7],[!VAR9]]
   %0% %2-%
[!ELSE]
   [!NEQ,%0/END=%,LEN]
      VAR9 [!VAR7]
      MINUS 1
      VAR7 %0/END=%
      VAR8 0
      GET.STR.3%0/% %-%
   [!ELSE]
      PLUS 0 0
      MINUS 1
      VAR7 [!VAR9]
      PLUS 0 0
      GET.STR.3%0/% %-% END-ARGS
   [!END]
[!END]
```

GET.STR.3.CLI

```
PLUS 1
[!UNE,[!VAR7],[!VAR9]]
   [!NEQ,%0/END=%,LEN]
      %0% %1%%2% %3-%
   [!ELSE]
      [!NEQ,%2%,END-ARGS]
         %0% %1%%2% %3-%
      [!ELSE]
         VAR9 [!VAR7]
         MINUS 1
         %0% %1%
      [!END]
   [!END]
[!ELSE]
   [!EQ,%0/L%,]
      POP
      STRING %1%
   [!ELSE]
      DEL/2=IG %0/L=%
      WR/L=%0/L% %1%
      DEL__NL %0/L=%
      POP
   [!END]
[!END]
```

Δ

Jim Siegman is chairman of the NADGUG publications committee, and treasurer of the Chicago Area Data General Users Group. Send comments or questions to him c/o Focus Magazine, 5332 Thunder Creek Road, Suite 105, Austin, TX 78759-4022.

If you want to be able to use wildcard templates in your argument, instead of using [!FILENAMES] to generate the equivalent list of names, then code your program to look up filenames with the ?GNFN system call

(from page 36)

process should be designed to access *all* arguments sequentially rather than just the *first* argument. If SED had been designed with this in mind, then

X SED [!FILE,+.F77]

could be used instead of:

X SED ([!FILE,+.F77])

The current version of SED requires that it be executed once for each file, adding to system overhead. In another example, I have a utility program (CASE) that does upper/lowercase conversion. Since it accesses all arguments, it is only loaded and executed once for each set of files or template, processing each one in turn:

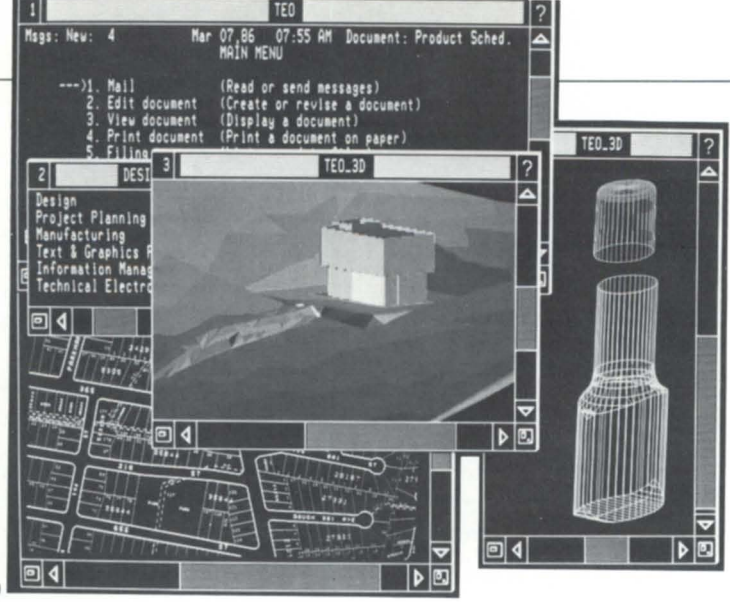
X CASE/LOWER [!FILE,+.F77]

If you want to be able to use wildcard templates (*, −, or +) in your argument, instead of using [!FILENAMES] to generate the equivalent list of names, then code your program to look up filenames with the ?GNFN system call using the template retrieved from the CLI command line. However, it's easier to use the [!FILENAMES] pseudo-macro; it generates pathnames across multiple directories, whereas ?GNFN is limited to only one directory at a time.

These are only some of the many ways in which the use of CLI switches and arguments can be incorporated into the design of a program. Each program will have a different design need that requires consideration of all of the possible techniques.

Next month, in the final installment in this series of articles, I will present a method of analyzing all of the switches on any CLI argument in a single subroutine call. In addition to trapping all invalid switch names and invalid switch usage, it permits minimally unique switch names and provides a method of "interrogating" the program to discover its valid switches. Don't miss the exciting conclusion to this three-part miniseries! Δ

Geological Survey of Canada Contribution 27686. John A. Grant is a geophysicist with the Geological Survey of Canada. He is also the "system manager, chief cook, and bottle washer" for the exploration geophysics subdivision's MV/4000. He may be contacted at 601 Booth St, Room 591, Ottawa, Ontario, K1A 0E8; 613/996-2325.



TEO/3D speeds design for engineers, manufacturers

Boston—TEO/3D software, a third-generation technical electronic office product, combines three-dimensional modeling and data base management with professional productivity tools for a range of engineering and manufacturing applications.

Designed to be integrated with DG's DS/7000 family of engineering workstations, TEO/3D is based on Easinet, a package developed by Easinet Holdings Limited of Sydney, Australia. Easinet features an open relational data base, advanced design and modeling functions, and flexible user interface.

With its live, concurrent windowing features and user configurable menus, TEO/3D provides a platform for integrating design applications around an open three-dimensional relational data base. It can also integrate productivity tools including word processing, electronic mail, on-line filing, and decision support functions based on DG's CEO office automation software.

"TEO/3D is the only third generation product for architectural engineering, mapping, mechanical engineering, and manufacturing applications," said Sherm Rutherford, director of DG's applications business unit. "The '3D' in TEO/3D represents design, data management, and distributed architecture," he added.

TEO/3D design features include flexible three-dimensional modeling, an adaptable user interface, user-definable symbol libraries, and artificial intelligence tools.

The modeling function lets the user create a three-dimensional model of a building, building site, or any discrete part, product, or system, and to produce a set of two- or three-dimensional drawings. The user can also view a project from any angle and display it as a realistic shaded image.

Using a set of plain English commands, users can create, define, and modify a library

or data base of symbols and standard drawings. The artificial intelligence features let users create design decision rules that reduce project turnaround.

The relational data base and integrated environment allow all applications based on the TEO/3D core to share a single model, so all members of a design team can base their work on the same data. Integrated productivity tools, which can include CEO, enable different groups working on the same project to communicate changes and ideas immediately.

An optional module called 3D/View can enable users to generate wire frame and solid-shaded models while providing hidden line removal capabilities. It also allows users to view models from an unlimited number of perspectives.

Prices for TEO/3D software range from $25,000 for a 5-user configuration to $170,000 for up to 200 users. Adding 3D/View would cost from $8,000 for five users, to $30,000 for up to 200 users. Δ

TEO/Electronics gives tools for design and simulation

Boston—Data General's new TEO/Electronics software, described as a third-generation technical electronic product, lets users concurrently create and simulate engineering designs. According to DG, TEO/Electronics combines professional productivity tools with the first electronic design system to use an advanced object-oriented data base and interactive logic simulation.

Designed to be integrated with DG's DS/7000 family of engineering workstations, TEO/Electronics can connect local computing resources with a network of engineering workstations, superminicomputers, compute and file servers, and mainframe systems.

"The first-generation CAD and second-generation CAE technologies revolutionized electronics engineering for their time. TEO/Electronics represents a third generation in electronic design automation called computer-integrated engineering (CIE)," said Don McDougall, vice president of DG's industry marketing division.

"TEO/Electronics is part of the TEO product set that provides integrated office automation tools by connecting each user through a network-wide common user interface modeled after Data General's CEO office automation software system," said McDougall.

Components of TEO/Electronics include:

• TEO/Electronics Logic Design System—interactive schematic capture featuring intelligent borders, windowing, pop-up menus and icons, all controllable using a mouse as the primary input device. The system operates from an integrated data base for all design and simulation functions, so the user can interactively design and simulate without recompiling data. This component is priced at $9,000 per user.

• TEO/Electronics Interactive Simulator—digital logic simulator that supports design verification through gate-level, functional, or behavioral modeling. It can be used for logic simulations and timing verification, and has no need for net list extraction or compilation. Price for this component is $7,500 per user.

• TEO/Electronics Component Simulator Libraries—preconstructed libraries contain 2,400 standard components commonly used with a schematic capture module. Users can select parts from the existing data base, or create and add new components to the libraries. The libraries include functional models and timing information for the simulator. Price is $1,500 per user.

• TEO/Electronics Interface Toolkit—a design data base language and procedural language interface provide for tight integration of new or existing customer applications into the TEO/Electronics environment and data bases. Price is $15,000 per user.

A sample system consisting of a DS/7520 engineering workstation with 4 MB memory, 70 MB disk, AOS/VS, Logic Design System, DG/Stage, and DG/View would cost $24,900 per user.

The software will be marketed to organizations that design and manufacture large scale and very large scale integrated circuitry, gate array integrated circuits, and printed circuit boards.

Data General also announced a cooperative marketing relationship with Fujitsu Microelectronics, Inc., to support TEO/Electronics workstation system sales. One of the first systems ordered will be used by Fujitsu in their Tokyo demonstration center.

Fujitsu will also make its cell libraries available to users of DG computer-aided engineering design systems. The company will adapt certain of its CMOS gate array cell libraries for use with TEO/Electronics. The first such library, to be ready in December, will provide for the design of circuits with Fujitsu's AV (1.8 micron) series of gate arrays. Subsequent libraries for additional Fujitsu gate array products are planned to follow. When a user's design performs to user specifications, it can be sent to Fujitsu for physical layout and fabrication at the company's design centers in Santa Clara, Boston, and Dallas. Δ

Software family debuts with QSS spreadsheet

New Haven, CT—Demos, Inc. is the distributor for a new family of software products beginning with QSS, a spreadsheet program for the DG Desktop and Eclipse models running RDOS or AOS, as well as MV/ series models running AOS/VS.

The design of QSS allows for a spreadsheet of 750 columns by 999 rows. Both the console display and the printer format can be dynamically changed by the user.

Non-DG terminals capable of communicating with the operating system are supported

since all special features such as cursor control keys, function keys, insert/delete line, etc., are table-driven.

There are built-in functions for accounting/engineering work, along with financial/economic functions including amortization and accumulation factors, compound amount, and present worth for single amounts and annuities. Interactive help instructions are available.

The program comes with an instruction/installation manual and is available on both diskette and magnetic tape. The MV/ series version costs $795; the Eclipse version, $495; the Desktop version, $295.

Demos, Inc., P.O. Box 8297, New Haven, CT 06530-0297; 203/934-9707 Δ

Dasher/286 is compatible with IBM PC-AT

Westboro—Data General's new Dasher/286 intelligent workstation, which is software compatible with the IBM PC-AT, features an Intel 80286 processor, and operates at a clock speed 25 percent faster than the PC-AT. The Dasher/286 has standard memory of 640 KB (compared with 512 KB for the IBM machine), and takes 30 percent less desk space than the PC-AT.

Standard features of the Dasher/286 include a single 1.2 MB 5.25-inch diskette drive, two RS-232/422 serial asynchronous ports, one Centronics compatible parallel printer port, and six standard 13-inch by 4-inch expansion slots (one 8 bit slot and five 16 bit slots). MS-DOS 3.1 is also included with the system.

The Dasher/286 processor executes at 10 MHz, but it can switch to 6 MHz operation when executing PC-AT applications that are timing-sensitive.

With DG's CEO Connection software, users can have access to CEO on a host computer, or to PC-AT applications running under MS-DOS. As an intelligent workstation, it can offload word processing, multiprocessing, and window management from a host CPU in a distributed processing environment.

The new workstation is available in either a desktop or floor-mounted configuration, and is expandable with up to four internal storage devices—a second 5.25-inch diskette drive with either 360 KB or 1.2 MB capacity, or a 3.5-inch 720 KB drive. Up to two fixed 3.5-inch Winchester disk drives with 20 MB each are also available. The Dasher/286 can execute both graphics and text with a standard monochrome display, using DG's proprietary monochrome/color text/graphics video adapter option card.

An optional Intel 80287 co-processor is available for intensive calculations. The user has a choice of a PC-AT style keyboard or a CEO style keyboard.

A Dasher/286 base system with 1.2 MB floppy, 640 KB RAM, two serial ports, one parallel port, and MS-DOS 3.1 is priced at $3,395. A similar system with a 20 MB hard disk is priced at $4,095. Distribution is through DG's direct sales force and value-added resellers. Delivery is 60 days ARO. Δ

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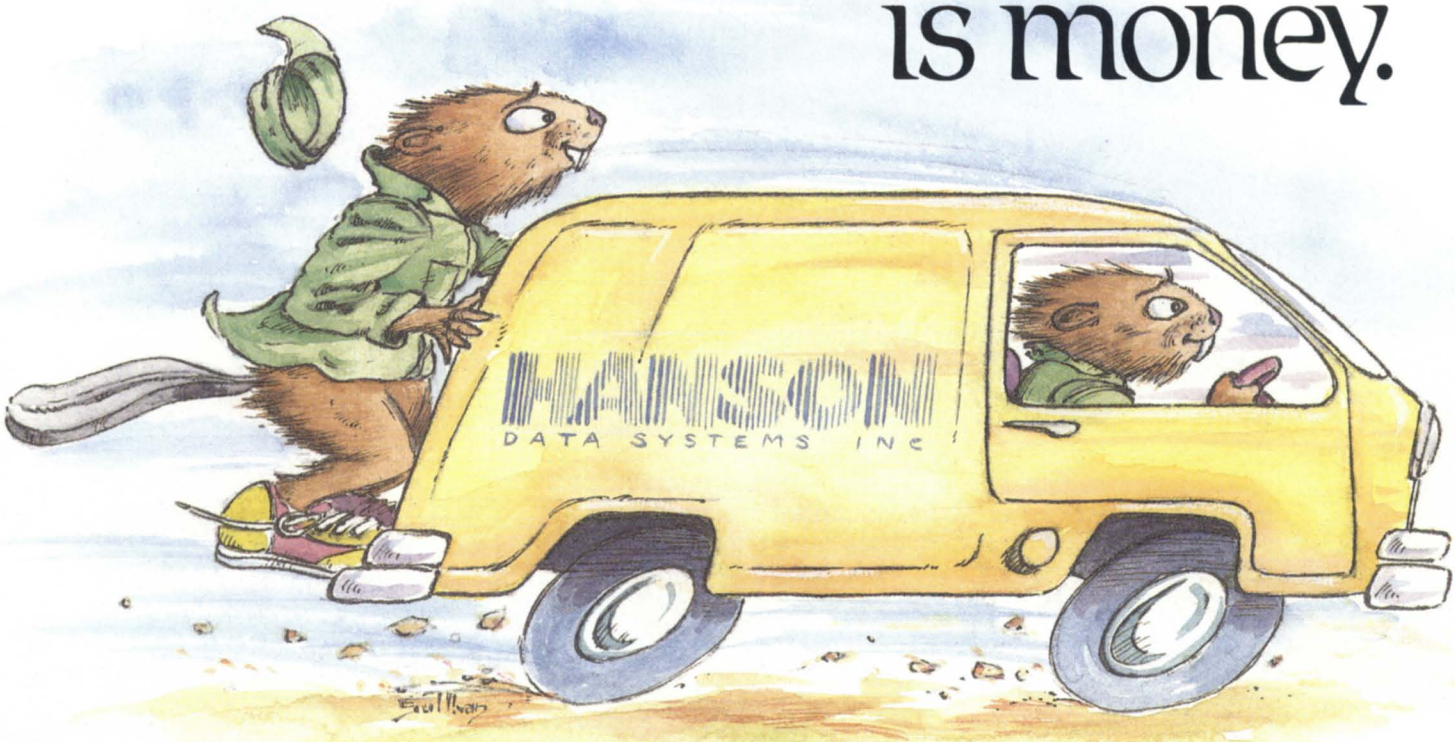

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Circle 21 on reader service card

We had a 53 percent increase in the number of NADGUG members over the last eight months since we installed the membership system and cleaned up our data base

(from page 11)

position Joyce used to fill. The new recording secretary is Dave Angulo. So we've replaced half of the officers. Hopefully, this will get more people involved and bring in some new ideas. The worst thing you can have is an organization getting stale.

You mentioned earlier how much it has helped to have continuity in the NADGUG staff members who have their offices at DG's headquarters in Westboro. Have there been changes in the NADGUG staff? Can you give us an update on how the NADGUG staff has been keeping busy?

The biggest change is that Barbara Hoogasian, who had been working part-time for the group, has assumed the coordinator's position. She will be performing most of the duties that were previously taken care of by Chuck Columbo. We have really taken the secretary, Debra Bedrosian, and made her into a membership clerk to handle member applications and manage the membership data and conference information. Now that we have the membership software implemented, we have a system in place so we can handle additional growth for the national group and provide better support for the RIGs and SIGs.

Since the new system was implemented, I understand that much better statistics about membership growth are available. How have the numbers and composition of the group changed?

We're seeing more activity along industry lines, and a lot more interest in starting up new special interest groups. As an example, new SIGs were just started for educators and for the petrochemical industry. There's also a new program that internally we've been calling "Box of Tide," referring to the way you always get a box of laundry detergent when you buy a new washing machine. We now offer new users of MV/ class machines a free one-year membership in NADGUG. We feel that over the course of that year, people will see the benefit of joining, and will remain members. That program is really still in the startup stage.

As far as numbers go, we had a 53 percent increase in the number of NADGUG members over the last eight months since we installed the membership system and cleaned up our data base. That growth rate could make us get big in a hurry; we've got the tools to manage that growth.

As he was leaving office, former president Rene Dominguez commented that the

changes of the last year have largely been in preparation for future growth. How does it look to you?

The changes so far have really been pretty dramatic. With the base of DG users, there's a potential for this group to have five or ten thousand members, rather than the two thousand we have currently. What we need to do now is really target those potential members, and go out and bring them into the fold. As we implement the new RIGs and SIGs now starting up, and target those members of existing RIGs and SIGs who aren't currently members of NADGUG, we could have a very large increase in our membership.

As I mentioned earlier, there are now 14 RIGs and SIGs starting up. Our new RIG/SIG Committee chairperson has set a target to double the number of recognized RIGs and SIGs over the next year. That's a very ambitious goal, but also very do-able.

We have to be able to offer these people something to get them to join. I think we now have an attractive package to get them not only to join, but to take an active role.

Some people I talked to sounded as if they missed "the good old days" when there was a more adversarial relationship between DG and the users. I think it's true that the mood at the meetings has changed over the past few years. Why?

I think it's a more mature attitude on both sides. A lot of the NADGUG members who were wanting to take the adversarial approach have found that you don't have to fight with Data General to accomplish something. Sitting down to talk out the problem person to person will do the job just as well and a lot easier. The same thing is true with Data General. They've become a more open organization, one that recognizes there's a great benefit in supporting the user group. The members of NADGUG represent a large portion of their user base, and it's to their advantage to give those customers a lot of support.

Our relationship now is as good as it's ever been. I hope that we can increase that camaraderie between users and DG personnel during the next year. Δ

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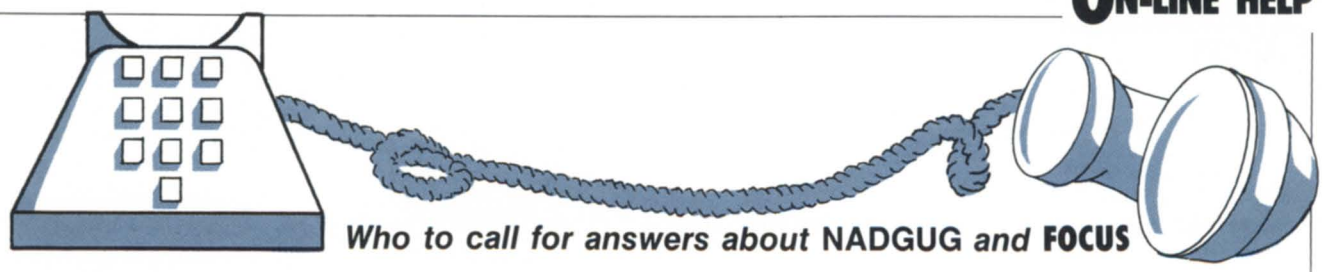

Who to call for answers about NADGUG and FOCUS

NADGUG's electronic bulletin boards
(300 or 1200 baud modem)
Rational Data Systems **415/924-3652**
OIS—to get an OIS ID and password, contact a DG field engineering telemarketing representative **800/325-3065**
In Massachusetts **800/952-4300**
In Canada **416/823-7830**

NADGUG membership, address changes
NADGUG staff **617/870-7721**

Editorial questions, comments, article suggestions
Greg Farman or Jeanne Sangster (please send product announcement to the address listed below) **512/345-5316**

Information about advertising in FOCUS
Sharon Park **512/345-5316**

Back issues of FOCUS
Turnkey Publishing staff **512/345-5316**

Addresses:

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c/o Data General Corporation, MS C-228, 4400 Computer Drive, Westboro, MA 01580

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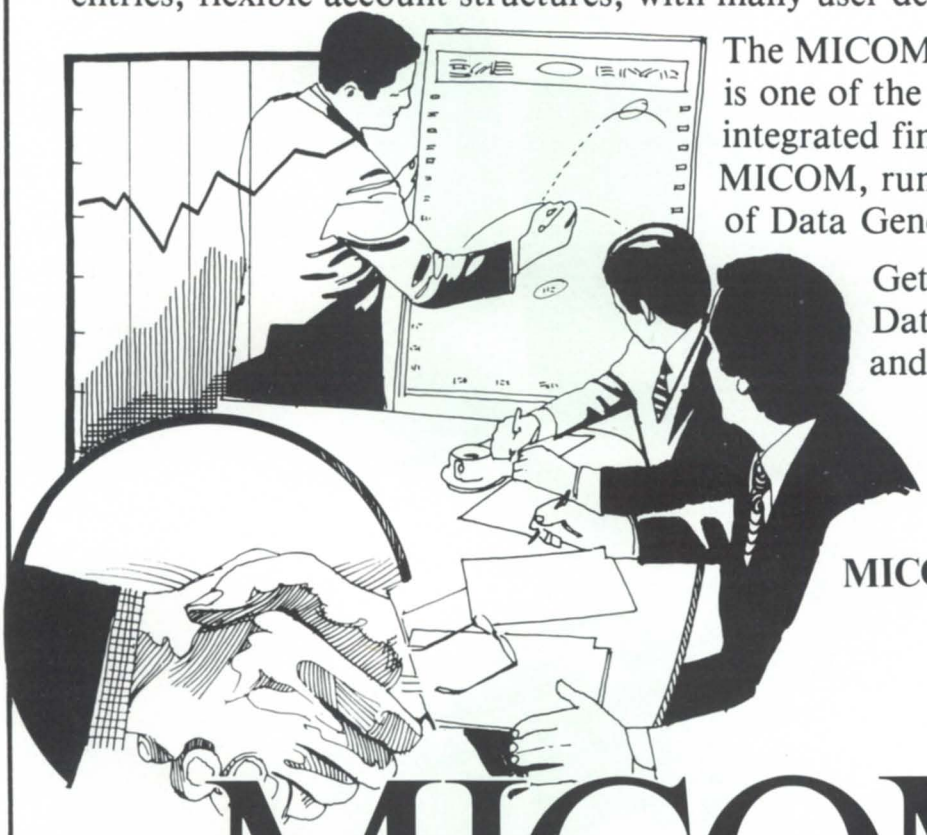

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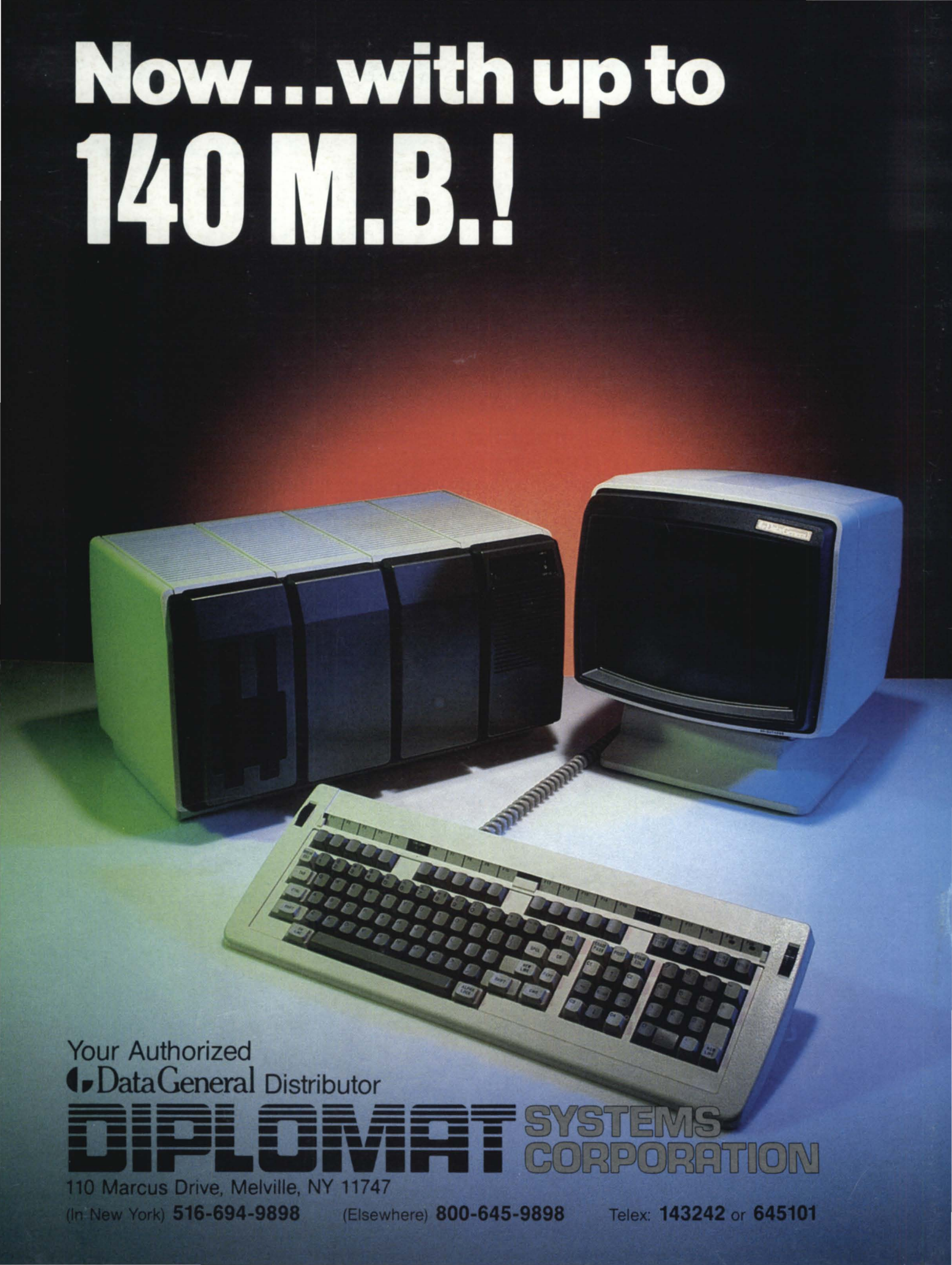

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Copley Systems, a system supplier based in Norwood, Massachusetts, recently signed an industrial distributor agreement with Data General. Under the terms of the agreement, Copley will market the Desktop Generation, MV/20000 DC and all associated peripheral equipment offered by Data General. The contract is estimated to be worth more than $20 million in the first year. According to Ira Cohen, president of Copley Systems, the new contract offers his company an authorized opportunity to service all Data General value-added resellers.

■

Data General reports that Information Access Inc., an OEM based in Cleveland, Ohio, has placed a hardware order that will be worth $10.5 million over the next three years. Information Access develops and markets computerized data processing systems for medium and large size manufacturers' representatives in the food brokerage and general merchandise industries. The company's primary software product, Sequiter VIII, is written in ICOBOL to run under AOS/VS. It provides order entry and transmittal, sales analysis, promotion tracking, invoice reconciliation, inventory control, new accounts management, word processing, and other sales support functions. IAI now has 300 turnkey installations, representing 3,000 users in the United States and Canada.

■

Creative Synergy Corporation of Atlanta has signed blanket marketing agreements with three software vendors. The three will incorporate Creativity, CSC's report writer and information retrieval system, into their ICOBOL packages. C-TRAC Systems of Columbus, Ohio, and National Distributor Services of Englewood, Colorado, specialize in software for the heavy equipment industry, while Key Computer Systems of Seneca, Pennsylvania, designs systems for the truck parts industry.

■

According to a recent DG press release, Team Tyrell, a leading participant on the Formula One Grand Prix auto racing circuit, will be one of the first users of DG's newly announced TEO/3D design and modeling software. Running on DS/7000 workstations, TEO/3D will help optimize the stiffness, weight, aerodynamics, and suspension characteristics of the chassis for Tyrell cars. The team also uses an MV/20000 located at DG's European headquarters in Paris for compute-intensive simulations, and an MV/2000 at the Tyrell headquarters in Surrey, England, for administration and communications. Pit crews carry a DG/One for analyzing performance and monitoring engine functions.

In the August issue, *Focus* showed photos of Team Tyrell in action, but neglected to give credit to the photographer—George Henne, who is also vice president of Micom Systems and a long-suffering Business BASIC columnist.

■

OCLC, the Online Computer Library Center, Inc., is now installing an L/2000 integrated library system for 12 campuses of the University of North Carolina. When finished early next year, it will be one of the largest statewide library systems in the United States. The L/2000 system will include Data General S/140, S/280, and MV/10000 computers.

The entire North Carolina system will be installed, tested, and maintained by Service & Training, Inc. a Gaithersburg, Maryland, company that specializes in service for Data General equipment. Service & Training now provides service for 35 other OCLC systems in the Eastern U.S.

■

DG Educational Services is marketing a series of "At a Glance" reference books—concise guides to the major functions of selected products. Current titles include *CEO at a Glance* ($30), *CEO Decision Base Spreadsheet at a Glance* ($25), *CEOwrite at a Glance* ($30), and *CLI Macros at a Glance* ($75).

■

LEDGUG, the Law Enforcement SIG, has issued its 1986 member directory, which lists information about member agencies and their systems and applications. For more information, contact Nancy Smith, Black Hawk County CJIS, 316 East 5th Street, Waterloo, IA 50703; 319/291-6586.

■

Fairchild Semiconductor's eight-year-old case against Data General drags on. In August, Federal Judge Marilyn Patel issued an injunction against DG, instructing the company to stop restricting sales of the RDOS operating system and other Nova-compatible software to customers with Nova systems. Patel also said DG can't use discriminatory pricing when selling software to users who don't have a Nova. Last year the court decided that DG had illegally restricted competition by bundling RDOS with a minimum Nova configuration. The trial to determine damages is now scheduled for early next year.

■

Hambrecht & Quist, a San Francisco venture capital and investment banking firm, has invested $750,000 in Worlco Data System, Inc. Hambrecht's investment is in the form of debt that can be converted to 300,000 shares of Worlco's common stock. Worlco, which uses DG equipment to provide circulation fulfillment services to magazine publishers, will use the proceeds of the agreement to pay off short-term debt, and expand sales and marketing efforts.

■

Penta Systems International, Inc. credited new technology, a broader product line, and lower prices for its good financial report card for the second quarter. Penta uses DG hardware for its turnkey editorial and typesetting systems. The company reported sharply higher sales and net income, and a major reduction in outstanding bank debt during the first half of 1986.

■

DG got a vote of confidence from the August 4 issue of Patricia Seybold's *Office Systems Report.* The newsletter printed a 15-page analysis of the company's office products, customer base, financial prospects, and market strategy. The conclusion: "Can DG do it? We think so."

■

In case you've been wondering whether it's worthwhile to log on to the NADGUG bulletin board, here's a little sample of what you could find there: "We have a program that could help all you printer control people—it's an IPC server that takes commands via the CLI control statement and passes them on to the EXEC IPC port. We run this server under username OP with superuser privilege and enable a subset of the EXEC control statements (mainly printer control statements). The RELAY program checks username to control who can use it. For privileged users, it passes the line through unaudited. We're able to give users a complete set of CONTROL @RELAY macros to control printers, do mounts, request responses (we don't have operators; tape drives are accessible by users), etc. Anyone interested can send me a note. Stan Gula, Monarch Systems Group, 1250 State Street, Springfield, MA 01102. If there is interest, I'll figure out a way to get you a copy." Δ