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RSX

THE
MULTI-TASKER NEWSLETTER

ANNIVERSARY

ISSUE

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DECUS FALL 1983 SYMPOSIUM
MGM GRAND HOTEL, LAS VEGAS, NEVADA
OCTOBER 24-28, 1983

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RSX 10TH ANNIVERSARY

SPECIAL ISSUE

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Welcome

A decade in the software industry is a very long time. Consider the RSX family. In ten years the patriarch of the family, RSX-11D, has been followed by four successive generations: IAS, RSX-11M, RSX-11M-Plus, and now Micro/RSX and P/OS.

For people, a decade is much shorter. And fortunately people make up the RSX-11/IAS Special Interest Group. We were brought together by our common interest in the RSX family, but RSX was never all important. What was important was the other person. We told each other stories, solved each other's problems, warned each other about pitfalls, gave each other our latest software inventions, and taught each other what the manuals never explained (and sometimes what Digital never wanted us to learn).

So tonight is a celebration - a night in honor of ourselves.

We have a lot to celebrate. Our accomplishments are truly legion and longlasting. The RSX-11/IAS Special Interest Group shaped today's DECUS. Look at DECUS SIGs, LUGs, newsletters, tape copy, and symposia and you will see the RSX-11/IAS Special Interest Group's mark. We started DECUS traditions like late-night Q&A's, presymposia seminars, campgrounds, and Magic sessions. No part of DECUS is unaffected by what we have done in the last ten years. And there has never been a DECUS party like the one we will have tonight.

There probably will never be a 20th Anniversary to celebrate and certainly any 15th will be held in a much smaller room. But as long as two people get together to work with each other on RSX, the RSX-11/IAS Special Interest Group will always be the best.

Jim Hopp
Nancy Pallett
Ralph Stamerjohn

RSX/IAS SIG Tenth
Anniversary Committee

Banquet Menu

Soup de Jour

Heart of Romaine Salad

Roast Prime Rib of Beef au Jus
Yorkshire Pudding
Broccoli Polonaise
MGM Stuffed Baked Potato

Peach Melba

Coffee, Tea, Milk

Your waiter or waitress will take
your orders for the cash bars.

Program

Welcoming Toast

Honor SIG Chairman

The SIG's Past

The SIG's Future

Honor Multi-Task Editors

Honor Symposium Coordinators

Honor Menu Coordinators

Honor Tape Copy Coordinators

Honor Working Groups

A Look at RSX

Honor Digital Representatives

Honor SIG Legends

Special Tribute and Toast

SIG Honorees

The RSX-11/IAS Special Interest Group has been blessed with active leadership from the very beginning. Special recognition is being given to the SIG members listed below, both for management and technical accomplishments.

June Baker

June Baker was SIG Symposium Coordinator from December 1977 to June 1981, scheduling a total of 6 symposium. She also drafted the original RSX-11/IAS SIG Bylaws. June is one of two RSX SIG members to be elected to the U.S. Chapter Executive Board, currently serving as Symposium Coordinator.

Larry Baker

Larry Baker has contributed technical symposium sessions, Multi-Tasker papers, and SIG tape submissions, mostly dealing with advanced FORTRAN topics. One particular contribution was a symposium session "Reducing the Size of Fortran Programs", which was later video-taped and distributed to Local User Groups.

Robert Bismuth

Robert Bismuth, while living in Wales, was U.K. RSX SIG Chairman and started European Magic sessions. At several U.S. and European Symposia, Robert gave the best-attended presymposia seminar the SIG has sponsored - "System Programming from an Application Point of View".

Mike Blake-Knox

Mike Blake-Knox was editor of the Multi-Tasker from December 1977 to December 1980, a period covering 30 issues. Mike also chaired most of the RSX-11M Question and Answer sessions during that period and presented a series of workshop sessions on crash dump analysis. Mike is currently on the DECUS Canada Executive Board.

Willam Burton

Bill Burton leads the SIG's effort to provide support for RSX-11M operating system release when DIGITAL support expires. His working group on Retired Versions of RSX acts as a clearing house for problem reports and new user-developed software such as device drivers.

Phil Cannon

Phil Cannon started the RSX SIG Tape Copy process at the Fall 1977 symposium, using as a seed the library he had organized from the Chicago-Area Real Time Society (CARTS). Phil served as the initial RSX representative to the DECUS library committee and was very active in symposia, chairing and giving a wide range of sessions. Phil is best remembered for never sleeping at symposia.

Bill Carroll

Bill Carroll was chairman of the Structured Fortran Working Group, which supported SIG versions of FLECS, RATFOR, RATFIV, and other Fortran preprocessors.

Legare Coleman

Legare Coleman is the current RSX-11/IAS SIG Chairman, assuming the position in July 1982. Before that, he was Menu Coordinator and chaired various RSX sessions.

Robert Curley

Robert Curley is chairman of DevIAS, the Delaware Valley IAS User Group and a long-time member of the RSX-11/IAS SIG Steering Committee. DevIAS is a unique, world-wide LUG and recently became a new SIG, a role it was performing in all but name for many years.

Jim Davis

Jim Davis was chairman of the CAMAC Working Group and lead workshops regarding its use with RSX products.

Bob Denny

Bob Denny is known for his software development efforts with the DECUS C Kit and RUNOFF. Bob has also chaired and transcribed the RSX-11M Question and Answer sessions since 1981 and taught the Files-11 presymposium seminar.

Robert Dolan

Robert Dolan was chairman of the first SIG Working Group on SPR's. In the first eight volumes on the Multi-Tasker, Robert contributed 90 SPR's and notes.

Bob Douglas

Bob Douglas is one of the original SIG members. He contributed the first major technical paper to the Multi-Tasker, a set of flowcharts to the RSX-11D V4.0 executive and submitted the first crash dump analyzer written for RSX-11D to the DECUS library.

Jim Downward

Jim Downward is responsible for most of the SIG's work in the area of RSX-11M system accounting and tuning. Jim has had submissions on all SIG tapes, the most famous being CCL. Jim chaired the Accounting and System Performance Working Group for many years and lead a series of four symposia workshops on RSX-11M system performance and tuning.

John Earls

John Earls was chairman of the first SIG Working Group on Documentation and also worked on the initial SPR efforts.

David Eisenhauer

David Eisenhauer is the current chairman of the Process Control Working Group.

Mary Ann Esfandiari

Mary Ann Esfandiari is responsible for starting pre-symposium seminars. Mary Ann headed the Training Working Group for several years and was RSX symposium coordinator at the Spring 1980 symposium. She also created the original Wizard and Etherbunny costumes.

Glenn Everhart

Glenn is perhaps the most prolific software developer in the SIG, distributing such packages as Focal, DDT, and PortaCalc. He currently heads up the SIG's Library Working Group and serves as the SIG's representative to the DECUS Library Committee.

Ray French

Ray French was SIG Chairman from November 1978 to December 1981. He also was Symposium Coordinator for the Fall 1981 symposium and currently is the SIG Executive Committee Planning Coordinator and U.S. Chapter SIG Coordinator. Ray drafted the current SIG Operating Procedures and was integral to getting Digital to recommit support to IAS.

Mike Fraser

Mike Fraser was active member of the SIG Steering Committee for several years and started the Virtual Disk Working Group. Mike also taught the Files-11 presymposium seminar.

Alan Frisbie

Alan Frisbie has given a series of popular papers on RSX file I/O and taught the Files-11 presymposium seminar. Alan is known for his company name "Flying Disk Systems".

Charles Goodpasture

Charles Goodpasture is currently editor of the Multi-Tasker, taking that role in October of 1982.

George Hamma

George Hamma has served on the RSX Steering Committees and Executive Committees since their creation. He holds the record for shortest term as SIG chairman, January 1982 to July 1982. George's term was interrupted by his election to the U.S. Executive Board as SUG Coordinator.

Robert Hayes

Robert Hayes is the current chairman of the Virtual Disk Working Group, which is working to standardize and extend virtual disk packages across all systems.

Fergus Heywood

Fergus Heywood was a member of the original SIG Steering Committee and chaired the BATCH working group.

Jim Hopp

Jim Hopp is the current RSX SIG Symposium Coordinator, responsible for scheduling the Anaheim, St. Louis, and Las Vegas Symposium.

John Jenkinson

John Jenkinson chairs the IAS Working Group, leading their effort for the Digital recommitment of IAS support.

Ken Johnson

Ken Johnson currently edits the RSX Symposium Handout, starting with the Fall 1982 symposium. Ken also taught the Crash Dump Seminar at Miami and Anaheim and has given several technical papers.

Mark Johnson

Mark Johnson chaired the User-Written Documentation Working Group and submitted several user tutorials and the first RSX mail system to the SIG tapes. Mark also is the author of BOMBS (Baffling, Obscure, and Mysterious Bugs).

Mark King

Mark King started the Process Control Working Group, which addressed the special software and hardware needs of process control.

Margaret Knox

Margaret Knox was member of the first RSX-11/IAS SIG Executive Board for several years and started the RSX SIG Handout in December 1980. Margaret led many of the SIG's lobbying activities involving Fortran debuggers and SPR service. She is best remembered as the Magic session Etherbunny.

Mark Lewis

Mark Lewis founded the SIG in 1973 and served as its initial chairman and newsletter editor for the first four years. Mark's leadership gave the SIG its vocal, active nature through the years. Mark also led the initial SIG development effort on RUNOFF and made other software contributions to the SIG tapes.

Robert Mangold

Robert Mangold chaired the Industrial User and Fortran Compatibility Working Groups and was an active contributor in the first years of the SIG.

Kevin McCue

Kevin McCue was an early member of the SIG and active in SIG planning and Steering Committees.

Jim McGlinchey

Jim McGlinchey served a variety of roles in the SIG. He was Menu Coordinator along with Legare Coleman in 1982. Jim also was the Symposium Coordinator for the Spring 1982 Symposium. Jim has given many technical papers and three presymposium seminars: Device Drivers, ACP's, and Microprocessor Software Engineering. He is the current RSX Wizard.

Terry Medlin

Terry Medlin is chairman of the File-11 and Device Driver Working Group and has given several technical papers on writing device drivers. Terry also runs the Software Clinic.

Colin Mercer

Colin Mercer is the European SIG Chairman and the Multi-Tasker contact for Europe. Through the years Colin has worked, primarily through Multi-Tasker reports, to keep the scope of the RSX world-wide.

Sat Mohan

Sat Mohan was a long-time RSX steering committee member and served as SIG long-range planner for several years.

Jim Neeland

Jim Neeland is on the current RSX SIG Executive Board and serves as Tape Copy Coordinator. Jim has worked on tape copy from the beginning and assumed overall responsibility in June, 1981.

Nancy Pallett

Nancy Pallett was appointed to the RSX SIG Executive Board in 1982 and currently serves as Publications Coordinator.

Dennis Perry

Dennis Perry was a member of the original SIG Steering and Executive Committee and the initial SIG DECUS Library representative.

Sally Shlaer

Sally Shlaer is one of the original SIG members and was very active for the first five years. She started many of our current traditions, including campgrounds and help sessions at symposia. Sally worked on the initial SIG wishlist ballots and was Symposium Coordinator for three symposia before becoming SIG Chairman in December 1977.

Ralph Stamerjohn

Ralph Stamerjohn was Menu Coordinator for the 1979 and 1980 Menus and Multi-Tasker Editor from December 1980 to October 1982. Ralph gave pre-symposium seminars on ACP's and Crash Dump Analysis.

Lewis Stoll

Louis Stoll worked at the first Software Clinics and coordinated the effort for Los Angeles and Atlanta. Louis was Menu Coordinator for the 1982 Menu.

Joe Sventek

Joe Sventek has contributed many significant technical contributions to the SIG, the most notable being the Software Tools for RSX.

Bob Turkelson

Bob Turkelson heads the current SRD Working Group and has been active in software development for this popular utility.

Tom Viani

Tom Viani is the current RSX Working Group Coordinator and leads the Training Working Group. His major responsibility is planning and scheduling presymposium seminars for the SIG.

Roger Vossler

Roger Vossler was the first RSX Symposium Coordinator and a part of the original DECUS Symposium Committee. After leaving the RSX SIG, Roger was the first chairman of the VAX/VMS SIG.

Van Wheeler

Van Wheeler formed and chaired the RSX-11M Print Spooling Working Group.

Bob Wood

Bob Wood coordinated SIG Working Groups for many years and lead the Unsupported Software Working Group.

DIGITAL People

The key contact with DIGITAL has always been the RSX Product Manager. A job difficult to describe, a DIGITAL Product Manager sits in the middle of the matrix and has dotted lines running to everywhere. At symposia, they represent all of DIGITAL, making all announcements (including those unpopular) and take all user criticisms. The RSX Product Managers have always been the DIGITAL representative to the SIG executive committee. They help schedule DIGITAL resources for the symposia and other activities.

The RSX-11 Product Managers for the last ten years include:

Mel Woolsey
Clay Neal
Carl Gibson
Jack Mileski
Kurt Friedrich
John Rose
Steve Paavola
Reid Brown
Chuck Turley
Laine Heiser
Tim Liesman
Gary Oden

The other major DIGITAL employee the SIG interacted with were the RSX Software Developers. RSX development started in the Mill. Later the RSX-11D/IAS group concentrated in Reading, England and RSX-11M moved to Tewksbury. The current development team for RSX-11M related products is located in Spitbrook, New Hampshire and the revived IAS group in Stow, Massachusetts.

No one really knows how many DIGITAL employees have been associated with RSX products through the years. Many names are omitted below only because they are known to the SIG through their initials in the Software Dispatch. A very small list of DIGITAL developers who have contributed to the SIG though sessions and Multi-Tasker articles includes:

Jill Angel
Mark Angel
Eric Baatz
Paul Bezeredi
Dan Brown
Patti Carr
Carol Chorlton

John Covert
Dave Cutler
Clark D'Elia
Dale Donchin
Charla Foote-Cole
Mike Fox
John Franzini
Jason Gallant
Andy Goldstein
Tim Grey
John Harper
Sue Harris
Mike Harvey
Hai Huang
Glenn Johnson
Jim Kaufman
Kim Kinnear
Joy Kinnear
Leonid Kogan
Hank Krejci
Jane Lawler
Tony Lekas
Howard Lev
Peter Lipman
Brian McCarthy
Tim Martin
Mike McKay
Tom Miller
Herb Nichols
Tom Parmenter
Chris Petrozic
Mike Pettengill
Rick Perron
Hillary Pierce
Eric Pollack
Joe Provino
Craig Putman
Steve Rusich
Ron Schaefer
Ben Schrieber
Lee Siler
Larry Sweeney
Chuck Spitz
Micheal Tardiff
Bill Todd
Hank Watters
Peter Wannheden
Garth Wolfendale

The History of the SIG

Ralph W. Stamerjohn
Special Projects Coordinator

This is a loosely organized history of the RSX-11/IAS Special Interest Group, taken from the pages of the Multi-Tasker, the author's memories and taped notes from Mark Lewis.

How It Started

The first public announcement of the RSX-11/IAS Special Interest Group was the following page published in the DECUS Fall 1973 Symposium Meeting Program. From the very beginning, the abstract stated the major goals that would last throughout the decade: "exchange user-written extensions", "act as a focal point for user feedback to DEC", and "edit newsletters."

D4.1-4.2

SPECIAL INTEREST GROUPS ON RSTS- AND RSX-11: ORGANIZATIONAL MEETINGS

Mark F. Lewis & Robert A. Branton

FAA, Civil Aeromedical Institute & Southeastern State College

Oklahoma City & Durant, Oklahoma

Formation of two Special Interest Groups to serve users of RSTS-11 and RSX-11 respectively are proposed. The meeting will serve to organize the two SIGs and appoint a Steering Committee to coordinate activities of both SIGs in preparation for formal election of officers in time for the Spring 1974 DECUS symposium.

The purpose of both SIGs is to further the exchange of user-written extensions to both of these highly popular PDP-11 operating systems. Each of the special interest groups may also act as a focal point for user feedback to DEC for future developments. To these ends, volunteers to edit newsletters for the two SIGs will be sought. Participation by relevant DEC personnel in the SIGs' activities is clearly desired.

Meeting D4.1-4.2 went off on schedule at 8:30 am, November 29th in the Embarcadero Room D of the San Fransico Hyatt Regency. Both RSTS and RSX started at the same time, but soon went their separate ways. Mark Lewis recalls the first meeting on a tape recording he made much later:

So, at the San Francisco meeting in the Fall of 1973 we held our joint session....It was apparent during that meeting that the users of RSX-11D were not legion when compared with users of RSTS/E. In fact, I would guess less then 20% of the attendees at the first meeting were interested in RSX-11. On of the princible noise makers at the meeting, standing in the back of the room, was Mel Woolsey, then Product Manager for RSX-11D, who made his presence known by continuing to wave his arms and inquire whether he could join too.

Since it was obvious that the RSX-11D users were by far the minority of people present in the room, which was over crowded, I suggested that RSX-11D users adjourn to the exhibit hall which was largely deserted, where we could exchange names and get organized. Before leaving the room we did circulate a sign-up sheet. That sheet contained about forty names. On later investigation about one-third of them proved to be employees of DIGITAL. Further not all the names on the sheet represented people present at the meeting. One example that comes to mind is Sally Shlaer, who was not present at that symposium but who's name was added to the sign-up sheet by Tom Provost.

I met Tom when we adjourned to the exhibit hall along with Mel Woolsey and about half-dozen other people. The ones that come to mind were Bob Mays, Pat Clarke, and Larry McGowan, largely because they took the notes for that meeting. Indeed, I would say it was the half-dozen people who compiled the original RSX-11D wish list.

The RSX-11/IAS Special Interest Group's activities evolved into six major areas: its monthly newsletter "The Multi-Tasker", the biannual DECUS Symposia, Working Groups which attacked specific problems and issues, Tape Copy to collect and distributed user-written software distribution, user wishlists and menus, and SIG lobbying efforts for critical issues and concerns. Each of these areas are examined.

The Multi-Tasker

Special Interest Group's had come and gone before in DECUS. Until 1973, no successful PDP-11 oriented group had managed to form. Mark Lewis comments on the problem and his solution.

There was a lot of skepticism expressed, principally by the older DECUS members who had seen a lot of efforts to form SIGs of various sorts die shortly after they were created. Both Bob [Branton] and I felt the key to survival of a SIG between symposia was a strong SIG newsletter. We both had been to a number of DECUS symposia and noted that many people during a session volunteer to do things that seem to be lost once the immediate ambiance of the symposium had faded from memory. I felt that a strong newsletter, one that encouraged user participation largely by printing a lot of user names would probably be the key to our survival as a viable organization.

One month later, Mark published the "RSX11D SIG Newsletter". Reprinted in full on the next pages, the five page issue contained all the standard features of later newsletters: notes from the symposia, wishlist items, a column for Software Performance Reports, software and DECUS library notes, installation descriptions, and various notes from various sources.

The newsletter, renamed "The Multi-Tasker" in January 1975 became unique in DECUS for its frequency and content. After only six months, the Multi-Tasker went to monthly publication and kept up this grueling schedule for the next eight years. This special issue is appropriately the 99th issue of the Multitasker!

RSX-11D SIG NEWSLETTER

JANUARY

1974

Contributions and correspondence should be sent to:

Mark F. Lewis, Coordinator
RSX-11D Special Interest Group
C/O DECUS
146 Main St.
Maynard, Massachusetts 01754

or

Mark F. Lewis, FAA, AAC-118
P. O. Box 25082
Oklahoma City, OK 73125

FALL '73 SYMPOSIUM

A highlight of the fall meeting was a presentation by Hank Krejci on RSX-11D, Phase II, scheduled for March release. Featured are check-pointing and batch. DEC is developing a corporate batch JCL that will eventually be supported under RSX-11D. In the interim, the Phase II batch will be available and will be supported as a feature of RSX-11D independent of the DEC corporate standard. Phase II will also contain file support for magnetic tape, parity memory support, and handlers for VT05s, paper tape reader/punch, and various line printers. A file compression utility feature has been added to condense empty disk space so that free blocks are not fragmented. There will be 5 new manuals and 3 of the old manuals have been rewritten.

The RSX-11D Special Interest Group inaugural meeting featured a discussion of the organization of the SIG and a compilation of user desires. The structure of this newsletter reflects the suggestions of many members who attended that first session. The SIG currently has a newsletter editor (M. F. Lewis) and a liaison representative to DEC (Tom Provost of MIT). By the time the next meeting comes around we hope to see a more formal structure to the SIG. Past experience has demonstrated that unstructured SIGs are non-functional. Your suggestions are most welcome and will be published in future newsletters.

USER COMMENTS

Both Mel Woolsey and Hank Krejci asked for user feedback on RSX-11D. Although Phase II is pretty firm, Phase III is in the early stages of development, so user input should be provided now!

Some of the suggestions made at the meeting (in no particular order) include:

1. A better editor. Many users would like to have TECO. A PDP-11 TECO is known to exist. Written in-house at DEC, the PDP-11 version is said to be a line-by-line translation of OS/8 TECO, modularized to permit I/O interfacing to several PDP-11 operating systems. An RT-11 version is reported to be in better shape than an RSX-11D version. Whether TECO becomes available as a supported product for RSX-11D users depends, in part, upon expressions of user desires to DEC. A consensus of those users present at the fall meeting suggests that user demand for TECO is quite large.
2. RUNOFF, a text-formatting program that facilitates preparation of typed or printed manuscripts, and that is currently implemented on the PDP-10 (cf. DECUS 10-85), is scheduled for RSTS, but many RSX-11D users also must produce volumes of documentation. To some extent the future of this newsletter will be influenced by the availability of RUNOFF.
3. Plotting support, especially for LV-11s and CRTs. LV-11 plotting was demonstrated on a small PDP-11 system at DECUS. Clearly, RSX-11D needs similar support.
4. Communications support (e.g., COMTEX).
5. A time-sharing facility.
6. Index sequential files.
7. Provision for system recovery and warmstart on crash.
8. Operator overrides on system deadlocks (e.g., non-zero pool usage) to permit clean-up rather than re-boot.
9. Cross reference listings.
10. Better documentation of error messages.

11. Character handling features in FORTRAN.
12. A scientific subroutine package.
13. Larger symbol table size (or disk overflow of symbol tables), especially for TKB.
14. Task dump on abnormal task termination (and also, system dump on crash, especially for systems with mag tape).
15. File sorting capability.
16. System documentation (flowcharts, SCOM write-up, etc.) other than listings. Also listings of device handlers should be priced separately from the system listings.
17. Provision for interchanging files and programs among RSX-11D, DOS, & RT-11.
18. D- and I-space support for PDP-11/45s.
19. Multi-processor support, including bus switches, etc., and interfacing to non-RSX-11D PDP-11s.
20. DH-11/DJ-11 support for multiple DH-11s and DJ-11s. Interfacing of foreign terminals and CRTs (not TTY-compatible) should be facilitated.
21. Spooling of line printer output should be an automatic default for all system and user tasks that attempt output to LP.

(Thanks to Robert Mays, Pat Clarke, and Larry McGowan for helping to compile this list.)

SPRS

A much desired feature of the newsletter will be a SIG-compiled list of SPRs independent of DEC. The plan is to print all SPRs that we receive, so that (1) each user can determine if the problem is applicable to his installation, and (2) the SIG can help DEC decide if the problem is system-wide. Implementation of this feature depends upon the cooperation of every RSX-11D user. Anytime you fill out an SPR, send a copy to the SIG newsletter.

One of the things that surprised me at the fall meeting was a survey taken at one of the sessions, a survey that showed that a great many users have never seen an SPR (Software Performance Report) form. If you don't have any SPR forms, get some from your software support specialist. Use them to report all RSX-11D problems (don't forget to make a copy for the SIG), including those problems that are not so much software errors, as they are human engineering problems.

I've heard two reports of failure to delete an old RSX.SAV file via the usual MCR>PIP and DELETE. Dave George writes that a solution is MCR>REQ ...PIP/UIC=[11,17] followed by the appropriate delete. I don't know if an SPR was submitted for the problem.

DECUS PROGRAM LIBRARY

Arrangements have been made to publish in the newsletter abstracts of all RSX-11D-related submissions to the DECUS library. Ferne Halley has suggested that the SIG might want to form a committee to provide rapid review for all such submissions. Details of her suggestion will appear in the next newsletter. In the interim, if you have developed an applications program, an extension to the system, or a device handler, please submit them to the DECUS library and be certain to indicate, where appropriate, that the program runs under RSX-11D.

INSTALLATIONS

Other users are interested in your installation: the configuration you have, the peripherals, and your applications. This space is reserved for those descriptions. Send a summary of your installation (including any special features or problems you have) to the newsletter. Include your mailing address and phone number, if you wish other users to be able to contact you.

NOTES FROM THE RSX-11D UNDERGROUND

The material in this part of the newsletter consists entirely of gossip, unconfirmed (and often "wild") rumors, and just plain nonsense. It is our intention to print everything concerning RSX-11D that we hear, whether the source is reliable, unreliable, or even known. You have been warned: (1) A fast-compiling FORTRAN is rumored to be in the works. It will compile non-threaded (and perhaps non-polish) code without going through the MACRO assembler; (2) Support for GT-40s (and

by inference, other 11s) in multi-processor configurations is supposed to be high on the list of DEC priorities. An option for Phase III is considered likely; (3) Several people at the fall meeting heard a reference by a DEC representative to "RSX-11M". On direct questioning at the PDP-11/45 Product Panel, all knowledge of such a product was denied. According to the underground, "RSX-11M" was supposed to have been announced at the fall meeting. "M" is described as a small system, much like RSX-11A, but upwards-compatible with RSX-11D; (4) Despite a total absence of DEC comment, there is a persistent report circulating that a time-shared COBOL will be an option available under Phase III; (5) A PDP-11 Writeable Control Store is reported months away; (6) A double density disk is likely to be announced before June, a floppy disk by December.

Mark Lewis was editor for the first 45 issues, from January 1974 (V1.1) to December 1977 (V8.1). Mike Blake-Knox followed with 31 issues from January 1978 (V9.1) to November 1980 (V13.5). Ralph Stamerjohn published the next 20 issues in the period from December 1980 (V13.6) to September 1982 (V16.3). The current editor is Charles Goodpasture whose two issues had to break with the monthly publication schedule as the overall slowing in RSX products and SIG activities was reflected by a drop in user submissions.

In addition to the editors, Colin Mercer was European contact almost from the very beginning. Through Colin's effort the Multi-Tasker became an true international publication. Later, Garth Wolfendale and then Clive Edington served the same role for Australia.

The Multi-Tasker has impressive statistics. The first 97 issues totaled 3052 pages and fill five three-inch binders. 562 people have contributed 1632 articles, reports, and notes. A complete index is included in this issue.

The Multi-Tasker published a wide range of material. First and foremost were Software Performance Reports. Todate, the SIG has published 638 SPRs, the first of which came from Dave Beckwith:

1. Documentation error in "RSX-11D Guide to Writing a Device Handler Task":

"The description of..NADD on page A-7 of the manual states that R2 should contain the address of the listhead or the previous node. After looking at the code, I believe it must be in R4 rather than in R2." (Dave Beckwith)

The champion SPR submitters to the Multi-Tasker were Robert Alan Dolan of the Speech Communications Research Laboratory, Inc. with 85 and Mike Blake-Knox of Northern-Telecom with 65. Other double-digit submitters are Gene Hodges (16), Niel Errington (16), David Kristol (15), Bob Wood (14), G.J. Ales (14), Alan Frisbie (13), Sally Shlaer (11), Dave Beckwith (11), and Ken Levitt (10).

The other major type of material was technical articles and hints. Bob Douglas had the first major technical article in September 1974 when he published update flowcharts for the then new RSX-11D V4 executive. Sally Shlaer started a steady flow of technical information with the HELP feature started in V3.1 (January 1975).

The following are samples from the Multi-Tasker. The first is a short note from Sally on how to get 'startup command files' on RSX-11D.

Using Typeahead with SAV

- I. Sally Shlaer offers the following suggested procedure on SAV:
1. Clear all type-ahead buffers: Go to each terminal in turn and do this:

```
^C
PASSWORD (type password) <CR>
^C
MCR>^Z
```

2. Recapture MCR at your favorite terminal and dismount all disks:

```
^C
PASSWORD (type password) <CR>
MCR>DMO DK0:
MCR>DMO DK1:
MCR>^Z
```

3. Now then, type ahead very carefully, since there is no echo:

```
SAV<CR>MOU DK0:<CR>MOU DK1:<CR>^C
```

In May 1975, the Multi-Tasker published its first major article on RSX-11M, which was soon to be the dominate RSX operating system. Northwestern University was one of the original field test sites and submitted the following report.

RSX-11M: First Report

V3.5, April 1975

RSX-11M: FIRST REPORT

The following report, from Eric Baatz, Sandy Colussi, Kim Kinner, and Bill Lennon (Northwestern University), summarizes the experience of one field test site with RSX-11M:

In general, the system, both mapped and unmapped, works as specified. It was very nearly bus-free in the test site version (Base Level 6) and should be better in the release version (Base Level 8). At Northwestern we have had experience with RSX-11M since July 15, 1974 on systems with both one and two RK drives, 16, 28, and 32K words of memory, cassettes, DECwriter, and a VT05.

Hardware Configuration:

Because RSX-11M uses a significant amount of disk space for the executive and commonly used system programs (CUSPs), a single RK system is not very effective for system development. To illustrate, the system is distributed on three RK cartridges. For each phase of SYSGEN, the necessary pieces must be gathered on the disk. Unless this can be done quickly, the entire process becomes extremely trying. In any case, because SYSGEN may require assembly and linking of the entire system and CUSPs, the process can be very time consuming. Prolonging the process by thoughtless file manipulation wears on the nerves.

Furthermore, backing up any large amount of data without a secondary storage device with comparable bandwidth is undesirable. Thirty cassettes may hold the information from an RK, but they do not represent its practical equivalent. In any case, there must be some medium, be it cassette, DECtape, or another RK drive, for transferring data from one RK to another.

Because the system makes extensive use of the disk, due to the heavily overlaid character of the system and utilities, system performance is closely tied to disk performance. Clearly, some disk contention may be overcome by having multiple drives (or devices) and putting various active files on different devices.

After taking into account the remarks under "Software Considerations", it seems that a 16K system with one RK is a reasonable system for someone who is not going to be doing heavy system development and who will be running a slowly changing application that does not have to deal with huge amounts of information.

A larger system, with at least 24K and two RKs and a DECTape, would be viable for system development and serious application level program development. Any serious use of Fortran also seems to require more than 16K.

Software Considerations:

RSX-11M console interaction (MCR) and utilities are very similar to those of RSX-11D. Someone who knows how to interact with -11D to solve his problems should have little trouble using -11M. However, his programs may be more difficult to adapt, because although -11M provides most of the capabilities of -11D, the form may differ from -11M to 11D. For example, RSX-11D's RECEIVE DATA OR EXIT directive does not exist in -11M. The same effect may be achieved, however, by combined use of RSX-11M's RECEIVE DATA and EXIT directives.

RSX-11M is essentially a small version of a "big time" operating system, as opposed to the top of the line of a series of small systems, and clearly shows the professional expertise of the team of designers working on it. It is well coded by experienced programmers, who in almost all cases adhered to high standards of internal documentation at the subroutine level and below.

Due to the complexity of the system, and the ability of the programmers involved in its creation, a significant investment in time and ability is necessary to attempt any modification of the executive, MCR, or the file system. The intertwining of the system that resulted in its efficiency and compactness also resulted in the creation of a very complex programming environment that must be assimilated before the user can make modifications that are not exactly along the path of the existing code.

The system is not basically secure, in that it cannot be protected from the malicious user, although some file protection from carelessness is available for the friendly user. The UIC concept that implements this protection at first seemed awkward, but soon proved itself when users consistently used UICs appropriate to what they were doing.

All the RSX-11M manuals we have seen are good, and it is not too difficult to learn how to use the system from them. However, documentation of the internal interrelations among MCR, the executive, and the file system is somewhat sketchy. This knowledge is vitally necessary for any extensive modification of the executive. The addition of drivers does not seem to fall under the heading of "extensive" system modification.

The sources of the utilities (MAC, TKB, Files-11, etc.) are not part of the sources included in the basic -11M purchase price. For extensive system modification, the sources of these tasks, or at least the listings, would be desirable. For example, to write an ACP for some strange device, it is very nice to be able to use the File Control Services, PIP and Files-11. The mysteries of the system interrelations can be partially unraveled by seeing them in action. We have suggested to DEC that a sample utility be included in the distribution system.

The 16K system consists of an 8K executive and 8K of user space. An 8K executive allows the full range of system support as well as a useable sampling of device drivers. For example, our 16K system was capable of driving cassettes, various TTY-devices as consoles, RK disks, and a line printer. If new drivers are added, the executive becomes larger unless the free storage pool shrinks in direct proportion. We experienced no free storage problems with our system.

Having 8K means that the user does one thing at a time. Two circumstances contributed to this. Many frequently used utilities, e. g., the assembler (MAC), the task builder (TKB), and Fortran (FOR), require at least 8K, and no CUSP is written for multiusers.

MAC and TKB run slowly in 8K and have quite limited space for symbol tables and the like. The release version should have ameliorated this a bit by allowing the user more control over the interaction between MAC and TKB.

The user can fit a lot of assembly language into 8K, but less than 100 lines of Fortran. The latter problem has two roots: the inherent support necessary to execute threaded code and the size of the Fortran object time routines. The release version should have partially solved this last problem by loading with a program only the object time support it needs. For example, a program that does no floating point I/O would not load the rather extensive routines needed to support them.

With a partition larger than 8K, Fortran becomes a more generally useful tool, because the overhead penalty has already been paid. The increased size is used entirely for generated code.

The Multi-Tasker has published many programs and subroutines. An example I remember well because I used it three days after I received my issue was Kim Kinnear's neat program to turn ODT into ZAP.

Disk Patching Program Using ODT

2. DSKLUK: Disk Structure Modification Utility (RSX-11M)
Submitted By Kim Kinnear, Computer Sciences Research Laboratory,
Northwestern University, Evanston, IL 60201.

Recently one of our RK05 cartridges with Files-11 format had its home block destroyed. We had some fairly recent backup, but one or two days spent recovering this cartridge would be shorter than trying to bring our backed-up information up to date. It seems that there is no readily available program that allows one to wander around an unmounted disk and read or write arbitrary logical blocks, something of a necessity to rebuild a partially corrupted disk structure. Such a program is easy to write, but it was not economical for us to spend too much time on this project (we did have SOME backup). One design for this program would consist of a core buffer, a method to read in any logical block, write the core buffer out to any logical block, and modify the data in the core buffer in between. Since the buffer modification command set would be nearly a subset of the commands already existing in ODT, we hit upon the idea of using ODT as the command interpreter for such a disk modification program. We created a "program" which contained a QIO, and built it with ODT. In this program one uses ODT to set the I/O function, and the logical block number on the disk, then the user gives control to the program to do the actual I/O via the QIO. Control then returns to ODT and the user, where inspection or modification of the core buffer is possible. The core buffer may be written out to the same logical block as it was read from, or to another logical block. Somewhat to our surprise this program was rather convenient to use, besides having the obvious advantage of flexibility. We feel that the technique of using ODT as the interface for operator interaction with a number of primitive service routines may be of somewhat general usefulness, particularly for "one-shot" programs to solve specific problems in a hurry.

N. B. the program has been checked out for RSX-11M, but I believe that it will run on RSX-11D also.

Two things to note about rebuilding partially corrupted Files-11 volumes. The first is that the 'Home' block and the 'Index' file are essential to the correct functioning of the file system, and knowledge of their locations on the disk is essential to any serious reconstruction effort. One way to obtain this knowledge is to dump the 'Home' block and the first three or four blocks of the 'Index' file, using the DMP program. This action is particularly appropriate since the location of this information on the disk is constant over the life of the volume (until it is re-'initialized'). Dumping this information BEFORE any problems come up takes only a few minutes and may help enormously if problems do arise. The second point to note is that the normal SYSGEN process creates new systems by using PRESRV

instead of 'initializing' new disks, and that this operation preserves the location of much of the vital information on a volume, notably the 'Home' block and 'Index' file. Therefore, knowing the history of a disk structure (i. e. which disk it was originally PRESRVed from) may help reconstruction efforts even though the preventative DMPs were not taken beforehand.

One final warning. This deceptively simple program has in it the potential for completely destroying any disk upon which it is used. It goes without saying that no one should use it without a complete understanding of exactly what he is doing, and it should NEVER be used on anything but a copy of the disk to be reconstructed. PRESRV works well on most disks even though they are unacceptable to Files-11. Remember, entropy always increases.

```
      .TITLE DSKLUK
      .IDENT /NU01/
      .MCALL QIO$S, WTSE$S
;
; DISK STRUCTURE MODIFICATION UTILITY
;
; K. E. KINNEAR
; COMPUTER SCIENCES RESEARCH LABORATORY
; NORTHWESTERN UNIVERSITY
; EVANSTON, IL 60201
;
; NOVEMBER 1975
;
;
; PROGRAM WHICH WHEN BUILT WITH ODT WILL ALLOW ONE
; TO READ OR WRITE ANY LOGICAL BLOCK ON
; A BLOCK STRUCTURED DEVICE.
;
; DEVICE SHOULD BE UNMOUNTED. THE LUN ASSIGNMENT
; FOR THIS TASK IS DELIBERATELY PERFORMED AT TKB TIME OR
; VIA THE REASSIGN MCR COMMAND, TO AVOID OPERATOR
; ERROR AS MUCH AS POSSIBLE.
; THE GENERAL IDEA OF THIS TASK IS TO ALLOW ONE TO READ OR
; WRITE ANY LOGICAL BLOCK OF A BLOCK STRUCTURED DEVICE INTO
; OR OUT OF A 512. BYTE CORE BUFFER. THIS BUFFER IS OF COURSE
; ACCESSIBLE TO ODT, TO ALLOW CONVENIENT MODIFICATION OF ITS
; CONTENTS ON A WORD OR BYTE BASIS.
;
; OPERATING INSTRUCTIONS:
;
; 0.   RUN THIS TASK.  GATHER YOUR WITS ABOUT YOU AND
;      TYPE G.
;
; 1.   YOU WILL SEE AN IL: (ILLEGAL INSTRUCTION TRAP
;      NOTIFICATION FROM ODT).  THIS IS DESIRED.
;      NOW EXAMINE RO ($0/ ...) AND SET RELOCATION
;      REGISTER 0 TO THE VALUE RETURNED. (E. G.
;           $0/300 <CR>
;           300; OR <CR>
```

```

;
; 2.   SET I/O CODE IN R0.
;
; 3.   SET LOGICAL BLOCK NUMBER IN R1,R2 (HIGH,LOW).
;
; 4.   TYPE G. YOU SHOULD SEE ANOTHER IL:
;       AT THIS TIME, YOUR OPERATION HAS BEEN PERFORMED.
;       $DSW IS IN R3, AND THE I/O STATUS BLOCK
;       IS IN R4,R5. ALL ARE ACCESSIBLE FROM ODT.
;       IT IS A GOOD IDEA TO CHECK THEM PERIODICALLY.
;
; 5.   NOW THE INFORMATION IS IN THE CORE BUFFER (IF IT
;       WAS A READ). YOU CAN SEE IT BY USING RELOCATION
;       REGISTER 0. (E. G. 0,0/ ... )
;
; 6.   GO TO 2
;
;
; R0   INITIALLY CONTAINS THE ADDRESS OF THE CORE BUFFER.
;       DURING EXECUTION, IT SHOULD CONTAIN THE
;       IO FUNCTION CODE (IO.RLB = 1000, IO.WLB = 400)
; R1   HIGH LOGICAL BLOCK NUMBER
; R2   LOW LOGICAL BLOCK NUMBER
; R3   $DSW AFTER I/O OPERATION
; R4   FIRST WORD I/O STATUS BLOCK
;
; BUFFER IS AT BUF
;
; BUILD WITH LUN 1 ASSIGNED TO DESIRED DEVICE
;
START:: MOV     #BUF,R0
        HALT           ;THIS GENERATES THE FIRST IL:
LOOP:   QIO$S   R0,#1,#1,,#IOSB,,<#BUF,#512,,R1,R2>
        MOV     $DSW,R3
        WTSE$S  #1
        MOV     IOSB,R4
        MOV     IOSB+2,R5
        HALT           ;THIS GENERATES THE SECOND
                       ;AND ALL FURTHER IL:
        BR     LOOP
        . EVEN
IOSB:   . BLKW   2
BUF:    . BLKB   513.
        . END    START

```

The Multi-Tasker was also a forum for user comments and complaints. One of my favorites is Jim Downward's reaction when RMSRST would only restore every other file on a backup tape.

Comments on RMSBCK/RMSRST

Also, since my letter, I have had occasion to try to use a RMSBCK tape to recover (selectively) files lost in a disk failure. DEC screwed me again! RMSRST (the restore utility) does not work. If the UFD has a large number of files, it only gets the first 8 to 12 files on the tape and then skips every other one. The RMSDSP utility says all the files are there and one can get the skipped files by going back and taking them off the tape one at a time.

--- -- - -----

If I lived anywhere close to Maynard, I think I could easily be provoked to violence. I have a whole disk of data on tape of which I can only get half, one file at a time. Once our disk is repaired, I can restore it via DSC but until then we're out of luck. I cannot believe this has happened. I tested the utility (RMSRST) but never on a large back-up of a whole disk. I never dreamed one tape utility could skip files which its sister utility could display.

DEC is getting sloppy and careless (unforgivable in the software business). This is definitely not the time for the RSX-11/IAS SIG to lose user interest and participation. If DEC thinks we don't care about getting functional, efficient software and rapid fixes to bugs which do appear, then we will forever be stuck with software products which are inefficient, bug-ridden, and a pain to maintain. I think this is the case now.

--James G. Downward
KMS Fusion, Inc.

Readers also used the Multi-Tasker to tell each other new secrets about RSX software. The kits almost always contained undocumented features and programs. Jim Downward describes the undocumented features in RSX-11M V3.2 indirect command processor.

Undocumented Features in IND

V11.4, October 1979

Dear Sir:

Since about February we have been a test site for RSX11M V3.2. The indirect command file processor ...AI, now has a number of very important but undocumented and unsupported features. The features are undocumented and unsupported because they went in after the deadline for documentation. However, the features work very well and they include items which have been on our wish list for several years.

IND now supports:

1. PARAMETER PASSING. If a command of the form

```
@cmdfile Parm1 Parm2 .... Parm9
```

is entered, the parameter strings will appear in variables P1 through P9. P0 will contain '@cmdfile' and COMMAN will contain the entire command as it was typed in.

2. COMMAND LINE PARSING via the .PARSE directive. The .PARSE directive is perhaps the most complicated and powerful ...AI directive. It is used to break(parse) a command string(input from a .ASKS or any string variable) into a series of substrings. The command syntax is

```
.PARSE ISTRING CONTROLSTRING OS1 OS2 ..... OSn.
```

ISTRING is the input string which is to be parsed. CONTROLSTRING consists of from 1 to (n-1) characters which are to be used as delimiters for parsing ISTRING into the output strings OS1 OS2 etc. If there are fewer characters in CONTROLSTRING than (n-1) the last control character is used for all remaining delimiters. Typically, a control character is a punctuation character but it may be anything(even a space). The control string may be a string variable, a string expression, or a doubled quoted string. String expressions may include forms such as 'STRINGEN1!N2!'. No string may be longer than 80 characters. The contents of ISTRING up to the first delimiter will be placed in OS1, the contents of ISTRING from past the first delimiter up to the second delimiter will be placed in OS2, and so on until the contents of ISTRING from past the last delimiter to the end of ISTRING are placed in OSn.

Consider the following example of using .PARSE.

```
.SETS STRING 'DK0:[1,2]STARTUP.CMD#4 #THIS IS THE STRING TO  
PARSE'  
.PARSE STRING ':J,}' DEV UIC FILNAM EXT VERSN COMENT  
; DEV='DEV'  
; UIC='UIC'  
; FILENAME='FILNAM'  
; EXTENSION='EXT'  
; VERSION='VERNS'  
; COMMENT='COMENT'
```

3. .TESTFILE. The .TESTFILE directive is used to find out if a file exists or to discover what physical device is currently assigned to a logical device. The syntax is

```
.TESTFILE filespec
```

When a .TESTFILE is executed, an FCS .PARSE is attempted on the file as specified. The FCS error code is returned to the special numeric symbol <FILERR>. If <FILERR> = 1, the file exists. Other error codes can be found by looking in the back of the I/O Operations manual. It should be noted that <FILERR> is set by .TESTFILE, .OPEN, .OPENA, and .OPENR. When a .TESTFILE or a .OPEN is executed, the expanded file specifier is placed in the special string symbol <FILSPEC>. By examining this string symbol one can discover the physical device assigned to a logical device. For example one can execute a <.testfile II>. The string II: will then be placed in <FILSPEC> where it can be examined and used.

4. .OPENR. The .OPENR directive is used to open a command file for reading via the .READ directive. The syntax is identical to the other .OPEN directives, ie

```
.OPENR [#N] filespec .
```

5. .READ. The .READ directive is used to read a data file, one ASCII line per .READ, into a target string variable. The syntax is

```
.READ [#N] stringvariable .
```

The special logical symbol <EOF> is set true if a .READ directive hits the end of file.

The only known restriction, at this time, is that parameter passing does not work correctly through a .CHAIN directive. With this minor exception all the features work well and make life much easier. While these features are 'unsupported', I am quite sure the RSX group would like to get feedback on them and information on any bugs related to them.

Many other forms of information appeared in the Multi-Tasker: question and answer session transcripts, formal SIG business reports, user requests for help, new DECUS library program notifications, installation descriptions, and occasionally humor. Three samples of the later appear below, starting with the first of Mark Johnson's infamous BOMB's:

BOMBS # 1

V10.1, January 1979

BOMBS

Welcome to the puzzling world of BOMBS - Baffling, Obscure, and Mysterious Bugs! Each issue of the Multi-Tasker will contain the description of the behaviour of a BOMB. Readers are challenged to determine an explanation for the described behaviour. If you think you have a solution, send it to:

Mark Johnson
Atmospheric Sciences
Room 204, Campus Tower
8625 - 112 Street
Edmonton, Alberta
T6G 1K8

The sender of the first correct explanation received will be rewarded with:

>>>>>HIS NAME IN PRINT<<<<<<
in the next issue of the Multi-Tasker!

Computer entomologists (bug collectors) are encouraged to send their favourite BOMBS to the above address to be included in later issues (please include a suggested answer!).

The suspect:

```
    ...
    MOV     VALUE,RO      ;GET A VALUE
    ASR     RO            ;DIVIDE IT BY 2.
    BLT     NEG          ;PROCESS NEG ELSEWHERE
POS:  ...                ;PROCESS POS HERE
```

The behaviour:

SOMETIMES RO contains a negative value at the statement labelled POS!

What is the Bit Of Mystery Behind it?

Next is the self-proclaimed expert Ino Better and his list of what the SIG should really put on the wishlist/menu.

Final and Definitive Menu Items

V14.3, March 1983

I am bothered by the RSX/IAS Menu. Too much energy is spent on the Menu without the truly definitive improvements to RSX and IAS even making the ballot. It is time RSX and IAS grew up and really begin to perform for its most important user - me. I had hoped DIGITAL and the user community would have seen the light and long ago put these items into RSX and IAS. But I see that it is up to me to bring to the attention of the world the final and absolute needs of programmers everywhere.

1. CONSOLE SERVICES

- o Add a "SWAP EVERYBODY BUT ME" command. RSX-11M on a 11/70 is a great one-user system. And with this command, I could make it a one-user system.
- o Add a "ABORT FOREVER" command. There are some tasks which will never run right. This would normally not be a problem, but unfortunately, there are some people who will always try to run them.

2. DEBUGGING AIDS

- o Do not provide any debugging tools, or alternatively, make the tools as primitive and obscure as possible. I cannot understand the RSX/IAS SIG's fascination with on-line, symbolic debuggers. Experience shows that debugging tools find bugs and good debugging tools find more bugs. Therefore, it follows that no debugging tools, no bugs.

3. EXECUTIVE SERVICES

- o There need to be more zero and one argument directives. I have no trouble remembering EXIT\$S and I picked up STOP\$S in a snap. However, QIO\$ is a problem. I could live very comfortably if I had a dollar for everytime someone tried to service a QIO AST using their I/O status block. And CINT\$ and CRRG\$ (for novices, connect to interrupt and create region) defy even wizards to code them correctly the first time.
- o Add a CRPL\$ (create pool) directive. The mapping directives are nice but users would get much more out of their systems from a create pool directive than the plain, ordinary regions they get from the mapping directives.
- o Add support for shared pool. It is a mystery why users want shared, multiuser tasks and no one has asked for the same from pool. After all, all TCB's are the same length. Think of the pool savings if PIP, MAC, and TKB all shared the same TCB. This concept could be used for all the other pool structures to which it applies.

- o Add a SCRA\$ (specify crash AST address) directive. RSX and IAS systems notify user tasks about almost every exception condition except the big one - system crashing. With this directive, my task would be notified when the system is crashing and could take appropriate action, like turn off the nuclear reactor or disable logins.
4. I/O AND FILE SERVICES
- o Pitch the FCS file descriptor and filename blocks and rethink everything else. Nobody understands them anyhow.
 - o Add breakthrough support to IO.ATT (attach device). I find it constantly annoying to try to use a device, issue my attach and find someone else has it attached. Now I sit, program dead, and wait for my attach. This problem could be solved quite simply by allowing attaches to breakthrough attaches.
5. SOFTWARE SUPPORT
- o Eliminate the software support services and instead use the money to throw monthly beer and pizza parties for users. In general, I suspect errors would get fixed just as fast and the service would be much more enjoyable.
6. UTILITIES
- o Keep TKB slow. If anything, make it slower. With computers getting bigger and faster, without TKB to rely on, I would never get a coffee break.

Finally, Frank Borger submitted a list of "Wonderful Hardware Problems", one of which is reproduced below:

Wonderful Hardware Problems

V14.6, June 1981

7. I can't load a tape on the tape drive.
- Harvey came up and said, "when I try to load a tape, the tape never feeds into the one vacuum column." Sure enough, something was wrong. After Hans and I worked a couple of hours, Hans finally spotted the problem. The tape on the supply reel was wound INSIDE-OUT and BACKWARDS. After questioning Harvey again, he told us the crucial information he had neglected to tell us earlier, and we were able to ascertain the procedure he used to produce the screw tape:
1. Load the tape, but put a half-twist between the supply reel and the head area, so the BOT and EOT markers are on the wrong side.
 2. Set the tape to look for BOT and WALK AWAY FOR A CUP OF COFFEE.
 3. When you return, find all the tape on the take-up reel, since the hardware couldn't see the BOT and EOT markers. (At this time, the half-twist between the supply reel and the heads is gone.)
 4. Rewind some tape back onto the supply reel, (it's inside out now,) and to make matters worse, wind it backwards, because you think you're working with your home movie projector.
 5. Try to load the tape. This won't work because the tape is wound backwards on the supply reel.
 6. Keep trying steps 4 & 5 above, until you have rewound 2400 feet of tape (BY HAND).
 7. Then tell us the tape drive doesn't work, but never mention that you had other problems, and leave the screwed-up tape on the drive.

Symposia

The chronological history of the RSX-11/IAS Special Interest Group follows the biannual DECUS Symposia. From a simple start of 6 people meeting in a deserted exhibit hall, the SIG grew to business meetings that overflowed rooms designed for 900.

When DECUS formed a symposia committee for the Spring 1975 Symposium, the RSX-11/IAS SIG was represented by Roger Vossler of TRW. Roger was coordinator for three symposium and was followed by Sally Shlaer (3), June Baker (6), Mary Ann Esfandiari (1), Ray French (1), Jim McGlinchey (1), and currently Jim Hopp (3).

The following sections trace the major points of the SIG's history through the first twenty symposium. The early symposia are remembered by Mark Lewis in his tape remarks, later years come from the reports in the Multi-Tasker, symposia programs, and my own memories.

1973 Fall - San Francisco

Obviously, the most historical event at this symposium was the formation of the SIG. But other sessions were occurring, as Mark Lewis notes:

Among the more notable events that occurred at that 1973 Fall Symposium was one paper session headed by a user, Eric Pollack, then of the University of Washington, who presented a simplified scheme for implementing timesharing in RSX-11D, a feature that many users seemed to want, and about a three hour question and answer session, one that was not originally scheduled in the program but held in response to user demands, at which Hank Krejci, the principle architect for RSX-11D, fielded questions not only from the users but also from several DEC Software Specialists in attendance.

1974 Spring - Boston

Continuing Mark's notes, we see the RSX-11M part of the SIG begin. In the sessions-at-a-glance, the slide show mentioned is listed as "Multi-Tasking Concepts Slide Presentation." It would be curious to see how well the current evolution matches the initial concepts.

At the Spring meeting in Boston of 1974, RSX-11M was announced. Indicative of the attitude many DIGITAL people have toward DECUS was the dreadful film-strip that was used in repeated showings for two days to present RSX-11M to the PDP-11 users. The poor fellow who was charged with answering user questions at that presentation, and I don't remember his name, was totally unprepared for the kinds of questions the DECUS members had for him. At one point, Tom Provost asked him if RSX-11M would support BTS [code name for IAS]. His answer was a definite yes.

That Boston 1974 meeting of the RSX-11 SIG (we only had one session) was the first of what was proved to be a long history of nighttime marathon sessions. RSX-11M had been announced. Fortran-IV Plus had been announced and the SIG meeting took the form of a series of questions asked of Mel Woolsey, Bernie Lacroute, who was the product manager for RSX-11M, and Garth Wolfendale, then the manager for RSX-11D. RUNOFF and TECO had become available although no one knew it because Hank Krejci had stuck them on an undocumented UIC of RSX-11D V4B, the second release.

There were more rumors spread, largely precursors of the 11/70, although the basis for those rumors were a pretty revealing set of remarks made by Dick Clayton at one of the sessions. It was at that meeting that I recruited Sally Shlaer to edit the Help Columns of the RSX-11 SIG Newsletter. It was also at that meeting that I met Louis Barton and Bob Douglas, two members of the SIG who were very active during its formative years.

1974 Fall - San Diego

At this symposia, a long-lasting discussion started on Fortran compiler compatibility and support. By this time there were four operating systems (RSX-11D, RSX-11M, RSX-11S, and IAS) and three compilers (MOP Fortran, Fortran IV, and Fortran-IV-Plus).

The Fall meeting in San Diego of 1974 introduced Clay Neal as the new RSX-11 product manager and it was Clay's lot to meet the users at a time when the users of RSX-11D became aware of the horror presented by three incompatible Fortrans. Only the earliest users of RSX-11D remember MOP Fortran, an inelegant compiler that produced relatively slow code but a compiler with, for its time, somewhat unique linguistic attributes. Clearly for a system designed for real time applications there was nothing to compare with MOP Fortran.

By the Fall of 1974 it had become apparent DIGITAL intended to replace MOP Fortran with two new Fortrans, FOR, a Fortran processor initially delivered with RT-11, and version 1 of RSX-11M and Fortran-IV Plus, intended for the RSX-11 family and those processors with floating point hardware. Fortran-IV Plus retained all of the features of MOP Fortran that appealed to the real time users. FOR had none of them. This left the users of PDP-11/40's which lack the hardware floating point processor required for Fortran-IV Plus somewhat in the lurch since DIGITAL was intending to desupport the only Fortran that provided the features they needed for their real time environment.

It was this somewhat hostile reaction that welcomed Clay Neal to the DECUS fold. Indeed it was only after much yelling and screaming, lead by Bob Mangold, that Clay finally committed DIGITAL to continue support for MOP Fortran. In fact Clay said MOP Fortran would be around as long as RSX-11D was around. At the time we had no idea the lifetime for RSX-11D was intended to be quite short!

Some other features of that Fall 1974 Symposium that I recall were, in addition to another night time wish list session, an attempt by Roger Vossler to inspire the creation of RSX-11 related local user groups: the first of seemingly endless chain of such sessions that lasted, to my knowledge, for four or five straight years without much success. Also during the Fall 1974 Symposium Bill Lennon, then Symposium Chairman for DECUS organized the first symposium committee and invited me to nominate a representative to the committee after first making it quite clear that there was no way he'd tolerate my own presence on that committee."

1975 Spring

The Spring 1975 symposia added major pieces to the RSX/IAS SIG framework: the steering committee and working groups. The later were discussed and formed to tackle the specific problems and projects facing the SIG. The initial set mentioned in the Multi-Tasker includes: Operating System Compatability, Fortran, CAMAC, DECUS Library, Industrial Users, Documentation, New Users, and User-Written Utilities.

Mark Lewis continues:

The Spring meeting in 1975 was in Miami, a meeting most remembered by the people in attendance for the absence of functional air conditioning in the hotel meeting rooms. As a consequence many people attended the meeting but not the sessions or if they did attend the

sessions it was only when highly motivated to do so and then only for a short time.

It was at that Spring meeting that the SIG steering committee was first formally organized and it was at that session that RSX-11D V6A, RSX-11M V2.0, RSX-11S V1.0, and IAS V1.0 were announced. The latter in particular, with its introduction of DIGITAL Command Language and its many incompatibilities with the rest of the RSX-11 family, produced a large vociferous reaction on the part of the RSX-11 users over the lack of compatibility among all members of the family. It was also at that meeting that one of the DIGITAL representatives, Peter Van Roekens, mentioned corporate bounds: he said that there would be "bounds" placed around the development of RSX-11D and of RSX-11M so that these systems did not encroach upon the functionality of IAS.

During the Miami meeting Sally presented the results of that first questionnaire and commented at one point that the user community seemed to know more about how the users were using the DIGITAL systems than did DIGITAL, a remark that prompted Clay Neal to ask if he could participate in the drafting of our next questionnaire. That summer, I, Clay Neal, Al Hulbert, Dale Moore, and Bob Wood met to draft another questionnaire...

The complete transcript for the session mentioned above appeared in the July 1975 issue of the Multi-Tasker (V4.1). Sections from the transcript appear later in the section on questionnaires, wishlists, and menus.

1975 Fall - Los Angeles

The Fall 1975 meeting started more traditions: tutorial and help sessions given by users for other users, the question and answer session, and a meeting place for SIG members - initially just any handy corner or pillar. Mark continues:

The Los Angeles Meeting in the Fall of 1975 produced three features of the RSX-11 SIG Symposium profile that have proven to be quite long lived. The first came about when Sally Shlaer organized a set of mini-tutorials presented by various users. At that time, there were many more RSX-11D users in attendance than there were experienced RSX-11M users so she had little difficulty in finding three users to present short mini tutorials for the RSX-11D systems.

She was rather less fortunate in locating suitable RSX-11M users, but one experienced user, Eric Baatz, volunteered to answer questions from the audience. Thus was born the question-and-answer session, long a feature of the RSX-11 Symposium. It should be noted the original question-and-answer sessions started out with the users answering questions. Over time as more and more DIGITAL people started attending those sessions they evolved into a format where the users asked questions of DIGITAL rather than of other users. I've always felt that someday we should at least try a session where DIGITAL asks the questions and the users answer them [editor: we took this suggestion to heart and scheduled such a session].

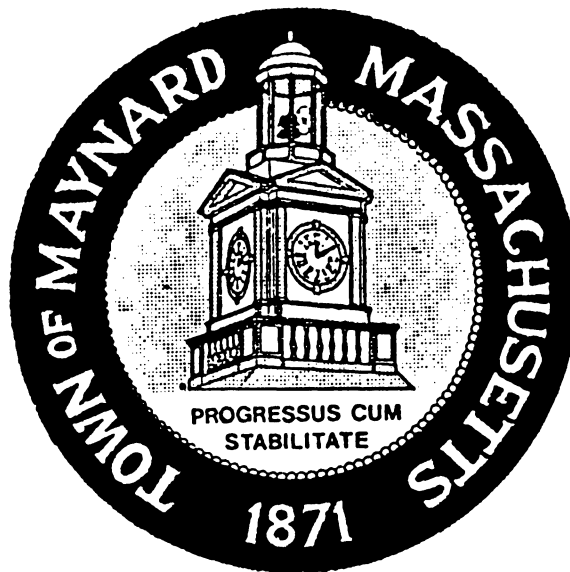
At one point during that meeting a group of users were gathered chatting in the lobby outside the exhibit hall when Sally was inspired to grab a piece of cardboard and scrawl a sign reading "RSX-11 spoken here" and to tape it up to a column in the lobby. That proved to be eminently successful and has since evolved into the SIG campgrounds, now a feature of all symposia.

Another permanent feature of symposia was also originated when, noting that I was getting more and more hopelessly confused trying to moderate a session with questions coming from every corner of a large meeting room with about 400 people present, Angela Cossette came up to me and suggested that I have people line up at the microphone. This worked so well that we've used it ever since.

But the hard news of the symposium was the infamous word "stabilization". Mark remembers the event:

The real bomb of the Fall 1975 meeting was the dropping of the other shoe: the "stabilization" of RSX-11D (hinted at Miami) was announced and users of RSX-11D were told to expect no further significant development efforts. Migration paths (that satisfied no one) were outlined to push RSX-11D users into the RSX-11M or IAS camps, where development would continue. Today, IAS users with RSX-11D origins have the dubious distinction of being the only users of a system to have been stabilized twice!

Around the time of the symposium, Mark was visiting the DECUS office. Mary Ann Oskirko, then DECUS U.S. Executive Secretary was selling the new town seal of Maynard as part of some town fundraiser. Mark commented they were the perfect size to make DECTape canister label and took a handful back to Oklahoma City. After the announcement, he decided the town motto fitted the situation perfectly and printed the following:



Progressus cum WHAT?

"Progress thru Stability" matched the situation perfectly and probably should be the SIG symbol as well. A side note, Maynard had not registered the seal. The Multi-Tasker is a copyrighted publication of DIGITAL. In theory, DIGITAL owns Maynard's town seal.

1976 Spring - Atlanta

By the Spring of 1976 the RSX-11/IAS SIG structure was firm enough to put down on paper. June Baker wrote the initial SIG Operating Guidelines. A draft was published in November 1976 (V6.5) and the final results adopted May 30, 1977. These initial bylaws are printed in the July 1977 edition of the Multi-Tasker (V8.1).

In the Spring of 1976 we met in Atlanta. Clay Neal had left the company and Carl Gibson became the third product manager for RSX-11. Again the users made noises about Fortran compatibility, noises that were largely ignored, and there were many complaints over the number of bugs in the latest release of RSX-11D, complaints that resulted during the meeting in DIGITAL creating a hotline for users of RSX-11D and a special effort to make sure the next release, Version 6.2, would be as bug free as possible.

It was also at this meeting that the SIG determined to create a set of formal bylaws and the task of drafting the initial bylaws was assigned to June Baker. In this effort, we were somewhat inspired by the example set by the DECsystem 10/20 Group, to base our formal structure on participation by local users groups. The success of the DEC 10/20 Group in basing their structure on LUGs was not emulated in the resulting Bylaws for the RSX-11 Special Interest Group largely because there were so few large and well organized RSX-11 LUGs.

1976 Fall - Las Vegas

The major event at the following Fall symposium was the presentation of the most extensive technical work ever undertaken by the SIG. The Report from the Working Group on RSX-11M/RSX-11D Compatibility detailed exactly every incompatibility in converting code from one system to another.

1977 Spring - Boston

As Mark notes and I can verify, the DIGITAL response at the Spring 1977 Symposium was met with disappointment and anger. Also, the RSX-11/IAS SIG followed the lead of OS/8 and PDP-15 users and started its own software underground, tape copy. Mark continues:

The following Spring we met in Boston and DIGITAL gave its formal response to the RSX-11M and RSX-11D incompatibility report. A response that was both promising and disappointing. Promising in the sense that they were now aware of the kinds of problems the incompatibilities presented and that they had resolved to solve many of them by fixing RSX-11M, but also extremely disappointing in that the apparent egotistical attitude of some of the DIGITAL people created the impression that they as developers were in a better position than the users to tell the users what the users needed.

It was also at the Boston Meeting, because John Barr had brought a copy of Pascal with him, that an ad hoc tape copying facility was created later to find fruition at the following meeting with the establishment of a formal tape copying mechanism. In this regard, the RSX-11 SIG efforts could hardly be called pioneering since I recall as early as 1970 and 1971 the OS/8 Special Interest Group spent many hours copying tapes on the PDP-8 and PDP-12 then brought to the meetings.

1977 Fall - San Diego

Mark Lewis's last remarks apply to the Fall 1977 Symposium in San Diego:

The San Diego meeting in the Fall of 1977 was largely uneventful. It was at that meeting that we had the formal tape copying activity. It was at that meeting that the RSX-11 SIG was given a formal campground — this in response to the demands that Sally Shlaer had made upon DECUS because of the failure of the "RSX-11 spoken here" signs at the Atlanta, Las Vegas and Boston meetings. So at last in San Diego 1977 the oldest established permanent floating crap game in DECUS was given a room of its own. This proved so successful that by the following meeting every SIG had a formal campground.

It was also at the San Diego meeting of 1977 that I resigned as chairman of the RSX-11 Special Interest Group so I can't say too much more about the activities of the SIG in future years. I was a participant in many of the panels held in Chicago, San Francisco and New Orleans and I was pleased to see the SIG hold the first user sponsored and user taught presymposium seminars, a topic we had discussed for many years but only achieved once we met in New Orleans and that only because of the efforts by Mary Ann Esfandiari who had joined the SIG at the Boston meeting.

San Diego was not as uneventful as Mark stated. He had already stated in the Multi-Tasker that this was his last Symposium as RSX chairman and newsletter editor. But nobody could foresee the SIG without him until his sudden resignation during the Symposium caused a flurry of reorganization activity.

Sally Shlaer became the new chairman and a "Multi-Tasker Task Force" was headed by Mike Blake-Knox. The only action of the task force ever took was to agree Mike should be the next editor. June Baker replaced Sally Shlaer as Symposium Coordinator. This had been planned the previous spring and was the only orderly action taken.

The campground room at San Diego was a huge success. The Town and Country facility is layed out such that the campground was a large room right behind the main meeting room for RSX sessions. Being easy to find, it was always full.

1978 Spring - Chicago

The SIG was now almost five years old and getting strangely quiet. I remember being first in line at the microphone at the closing session to ask two questions. After my first question, I turned to go to the end of the line and found there was none. The rest of the symposium seemed to follow the same pattern. Mark Lewis, in an editorial one year earlier commented on the apathy.

Editorial

The start of Volume 8 of The Multi-Tasker means that I am now in the second half of my fourth year as SIG (US) Chairman and editor of this publication. The recently adopted SIG bylaws provides a mechanism for the selection of my successor, a mechanism that starts in August and concludes in November, so I can look forward to passing the reins to the new chairman at the San Diego meeting.

On the morning in 1973 when the SIG was first organized (at the San Francisco symposium), approximately 30 users of RSX-11D signed up (along with 12 to 15 DEC employees). These early users were sufficiently motivated (and if you recall RSX-11D V2, you know why) that I did not have to wait long for submissions to the SIG newsletter to reach a level that required doubling the frequency of publication.

The early symposia, though haphazardly organized, reflected the motivation level of the users. Though frequently chaotic, these meetings were anything but quiet. Just about every user present participated in the discussions (perhaps "arguments" is a better descriptor) with Digital personnel over the directions RSX-11D was taking and the persistency of certain problems in recurring in each release after release after release...

By April of this year the circulation of The Multi-Tasker reached 2873 (including 480 DEC employees), making the RSX-11/IAS SIG the largest in DECUS. At the same time the number of submissions to the newsletter has fallen off. And while the Boston meeting last month yielded the largest number of SIG attendees, the meeting was very quiet. There were no strong user protests, even in the face of some pretty flaky (my opinion) comments by one Digital spokesman.

It may be useful to ponder the rise of what appears to be user apathy in the SIG. Have we become so large that active participation by individual users is difficult? Do large numbers inhibit effective interactions to the point where new members are lost in the shuffle and experienced users have heard it all before and have stopped giving a damn? Or does the apparent apathy reflect growing user satisfaction with the products that are being delivered, so that disatisfactions are few and not common to the large user base.

In any event, the future effectiveness of the SIG cannot be viewed with optimism. As a force for negotiating policy and system improvements with Digital, the SIG requires support from a high proportion of users. Unless Digital can be shown that the remaining problems are not inconsiderable, we cannot expect our negotiating to have results. As a mutual aid society the SIG has been effective in distributing, via the newsletter, hints and suggestions for improving system performance. To some extent the current DECUS policy that discourages new users from ordering back issues also denies them reasonable access to these ideas, and so it was not surprising to find many of them being rediscovered by new users (especially of IAS) at the Boston meeting (after all if the wheel is kept secret, you have to reinvent it). Perhaps we should reprint some of the more useful suggestions from past volumes.

When we examine the DECUS program library catalog we discover that the RSX-11/IAS SIG has less representation than any other similar SIG. Considering that we are the largest, why do we have the fewest program submissions?

It seems clear to me that the future development of the RSX-11/IAS SIG depends upon the SIG leadership's finding solutions to those problems that are now blocking effective participation by the majority of the members. While my chairmanship will end this year, I welcome any suggestions from the readers of The Multi-Tasker for improving the situation before the year is over.

1978 Fall - San Francisco

At the Fall 1978 symposium, Ray French became SIG Chairman after Sally Shlaer had to give it up because of a job conflict. DIGITAL did an unusual move and made an advanced announcement of RSX-11M-PLUS without a date for delivery.

1979 Spring - New Orleans

At New Orleans, the first SIG presymposium seminars were held. The Training Working Group, lead by Mary Ann Esfandiari, had worked since 1977 to get all the right approval and people in place. At New Orleans three users, whose names are unfortunately unknown, taught an all-day seminar on development of IAS Command Line Interpreters. This single seminar led to the over 30 held at current symposia. The RSX-11/IAS SIG has sponsored six other seminars through the years:

- * System Programming for Applications Programmers - Robert Bismuth, Adrian Bottoms.
- * RSX11M Device Drivers - Jim McGlinchey, Terry Medlin.
- * RSX11M Crash Dump Analysis - Ralph Stamerjohn, Ken Johnson.
- * ACP's - Fred Veck, Jim McGlinchey, John Wood, Ralph Stamerjohn.
- * Microprocessor Software Engineering - Jim McGlinchey, Art Gaughan.
- * Care and Feeding of Files-11 Disk Structure - Bob Denny, Mike Fraser, Alan Frisbie.

1979 Fall - San Diego

In the Fall of 1979, the DECUS Symposium returned to its favorite location, the Town and Country Hotel in San Diego. It was here that the RSX Magic traveling road show finally got its act together.

The Magic sessions had their origin at the Fall 1977 Symposium, also at San Diego. I was scheduled for a two hour tutorial on writing ACP's, but ran out of time before material. The session adjourned and reconvened as a BOF in the Acque room out by the pool. For the next four hours, twenty RSX computer bitbangers exchanged everything they knew about RSX I/O. The major contributor was Eric Goldstein from DIGITAL, then author of ACP's.

The BOF went so well that at Chicago we scheduled another BOF session with just the general topic of RSX-11M System Programming. About 30 people attended and the simple format of going around the room and letting people kick in their ideas worked well.

At San Fransico in 1978, over 100 people showed up. The room was packed, the windows nailed shut, and no-smoking declared. The previous unorganized round-table format did not work, as we discovered when the meeting was over.

So at the next symposium in New Orleans, I scheduled Magic as a session and got a room for 250 people. Then 350 showed up. Alan Silverman recalls opening the door and having three people fall out. We used a polling, interrupt system and in chaos prevailed through the night.

At this symposia Magic got on track. Thursday moring, Marg Knox, Mary Ann Esfandiari, and I were talking about the problems with the Magic session and what were we going to do if 1000 people showed up. Someone said "turn it into a show" and Mary Ann suddenly got very excited. She dragged Marg away, saying "we'll see you tonight".

What seemed like a 1000 people did show up. As I was fumbling with the introduction, in marched Mary Ann with a box. She officially outfitted me with the Wizard's Cape, Hat, and Cane. Next followed Marg made up as my assistant - the Etherbunny. The two had spent the afternoon buying and sewing the official RSX Magic costumes.

After setting a few ground rules (you had to stand to talk, only five people standing at once) and laying out the topics (Eureka, BlueSky, and War Stories), I noticed how thirsty I was. Turning the top hat upside down, a beer collection was taken and a local package store did one night's business in a few minutes. The show had started.

1980 Spring - Chicago

I remember the Chicago 1980 Symposium for non-SIG related matters. Lunches reminded me of herding cattle to feed troughs, only the cattle ate better. My room had no hot water for five days. The Magic session almost got arrested trying to 'sneak' 20 cases of beer into the hotel. Afterwards, the atrium of the Hyatt Regency made a perfect place for flying the paper airplanes given away in the demonstration hall. The Iran hostage rescue was attempted the morning of the last day and I remember most attendees watching news reports in the lobby.

1980 Fall - San Diego

In San Diego, the SIG copied from some others and started a Software Clinic. Up to this point in time, the only places to ask questions were formal sessions: SIG General Business meetings, Product Panels, and Question and Answer sessions.

A clinic, on the other hand, was a informal, day-long meeting. Experienced users and DIGITAL developers would come to the room whenever possible, find a handy table, and start taking questions. People with problems could wander in and be directed a 'doctor' by what was quickly named the 'triage team'.

The first clinic had many rough spots, but was enough of a success that it became a fixture at all succeeding symposium. I was the original triage team, followed by Louis Stoll and Gary Beckman at Miami and Los Angeles. Currently, Tery Medlin organizes the effort.

1981 Spring - Miami

In Miami, the SIG had one of its few confrontations with Digital. One key element missing from RSX software from the beginning was any sort of debugging tool for higher-level languages, especially Fortran. Finally user frustration lead to a demonstration, complete with picket signs, at the Fortran Product Panel.

Other actions were discussed. DIGITAL keep indicating that they needed a survey that would give the dollar value for a debugger so it was proposed we invent a mythical SPD and order number and have sites submit purchase orders for the product.

1981 Fall - Los Angeles

The Fall 1981 Symposium held at two downtown Los Angeles hotels is remembered for the wind sprints people had between meeting rooms. June Baker had just been elected to the U.S. Chapter Executive Board and left a big gap in the SIG. Ray French took over the role and George Hamma assumed most of the SIG Chairman's duties from Ray.

The Sunday before the symposia began, a huge snowstorm hit the Northeast and most DIGITAL attendees were stranded in Boston. This left the Monday schedule, traditionally the time for DIGITAL Product Panels a shambles.

1982 Spring - Atlanta

Atlanta marks the peak of the RSX-11/IAS Special Interest Group. All of the past SIG traditions and user enthusiasm came together at Atlanta for our best symposium. The theme was users helping users, with a new users question and answer session and panel discussions on system generation and RSX to VMS migration.

After Atlanta, the RSX SIG would see a decline in membership as members moved on to newer products, typically VAX/VMS or microprocessors.

1982 Fall - Anaheim

Legere Coleman took over as SIG Chairman from George Hamma when George was elected to the U.S. Chapter Executive Board. The Anaheim Symposium, held at the Disneyland Hotel, saw the SIG schedule a large number of small, 30 minute user-given sessions. By keeping the sessions to a narrow time slot, we were able get more people to present specific sessions.

1983 Spring - St. Louis

The 20th symposia for the RSX SIG was held in St. Louis. The SIG continued being primarily a group to help each other. DIGITAL announced the next releases of RSX, but noted there was no substantial new features, only bug fixes and new device support.

Working Groups

At the Spring 1975 Symposium, the SIG introduced the concept of Working Groups and Working Group Workshops. Working Groups were essential SIG's within the RSX-11/IAS Special Interest Group and would meet and decide on how to attack their specific problem area.

The concept has worked well and Working Groups have been a part of the SIG ever since. Robert Wood of Bell Laboratories was the first Working Group Coordinator. He was followed by Call Baltrunas of Gallaudet College and Tom Viana of the U.S. Naval Weapons Lab.

The records are not perfect, but a fairly complete list of Working Groups and chairman is given below:

- * Accounting and System Performance (Jim Downward)
- * ACP's (Ralph Stamerjohn)
- * BATCH (Fergus Heywood)
- * CAMAC (Jim Davis)
- * DECUS Library (Dennis Perry, Phil Cannon, Glenn Everhart)
- * Documentation (John Earls)
- * File System and I/O Drivers (Terry Medlin)
- * Fortran Compatibility (Robert Mangold)
- * IAS (John Jenkinson)
- * I/D Space (Ray French)
- * Indirect MCR (Tony Thurman)
- * Industrial Users (Robert Mangold)
- * Process Control (Mark King, David Eisenhower)
- * Retired Versions of RSX (William Burton)
- * RSX11M Print Spooling (Van Wheeler)

- * RUNOFF (Mark Lewis, Bob Denny, Mike Morgan)
- * SIG Tapes (Phil Cannon, Jim Neeland)
- * SRD (Bob Turkleson)
- * SPR's (Robert Dolan, Ralph Stamerjohn)
- * Snapshot and Post-mortem Dum (Ray French)
- * Structured Fortran (Bill Carroll)
- * Training (Mary Ann Esfandiari, Tom Viani)
- * User-Written Documentation (Mark Johnson)
- * User-Written Software (Al Hubert, Robert Wood)
- * Virtual Disks (Mike Fraser, Robert Hayes)

Tape Copy

One of the most visible projects of the RSX-11/IAS Special Interest Group has been tape copy. The process started at the 1976 Spring Symposium when John Barr brought a magtape with RSX versions of Pascal to the symposium. Users worked into the night making copies.

Phil Cannon got the process organized at the next symposium. He contacted Local User Groups and individuals and got them to bring their software collections to San Diego. The tapes were put onto a master and the CSS machine in the exhibit hall used to write copies.

Tape Copy continued like this through the New Orleans symposia. The master tape would be built right after the reception on Tuesday night. Then copies would be made, first for LUG's and then for any individuals who brought a tape. The process of building a tape has remained much the same. The night of the latest SIG Tape was reported by Roger Jenkins.

At the Spring 1982 Atlanta DECUS Symposium, I had approached Jim Neeland, RSX SIG Tape Coordinator, and had offered our site as a collection point for the Fall Anaheim Symposium. Our site is about 12 miles from the Disneyland Hotel, so it seemed like it would be a convenient point from which to create the SIG tape. Jim accepted my offer, so Tuesday night around 10:00 PM we loaded seven people and a box of 30 tapes into two small cars and drove to our site for a marathon tape copy session.

The first step (after the usual site inspection every programmer performs when he walks into a new machine room) was to prepare a scratch disk onto which the contents of all of the tapes would be placed. We have three RPO6 equivalent drives and two tape drives. I had requested exclusive use of the machine, so we had plenty of resources.

Next we had to load several utility programs: TECO (mine was not up to date), version 3.2 BRU, IPC, FFL and perhaps there were others that were necessary to create the SIG tape.

Before long there was quite a flurry of activity. Charles Goodpasture and Vince Perriello were carefully checking tapes and release forms to make sure that each tape had a release form and that it was signed. Jim Neeland and Glenn Everhart were copying the software from tape to disk, John Osudar was mounting tapes left and right and Tony Scandora was the "scribe" recording the directories into which each tape was placed.

I asked Jim, who was also coordinating the overall activity, how he determined which UIC the contents of a tape went into. Basically there is a set of 4 rules:

1. If the person submitted a tape last year, his data went into the same UIC as last year.
2. Each LUG is assigned a group number, and new submissions are placed into subsequently numbered member UICs within the LUG's group.
3. If a person is not part of a LUG but is close enough geographically to be a part of one, his submission may be included as part of the LUG group.
4. For every one else, they are placed into a common group with each submission getting its own member number.

If the tape UIC was wrong, then it was copied into the right UIC when possible. At least one tape was in BRU format and we wanted to place the files in a different UIC than they were in on the tape. This involved copying them to the same UIC as on the tape, but that UIC on the disk already had files in it. So first the files on the disk were renamed to a different UIC then the tape was copied and those files renamed to the right UIC then the original files were renamed back in to the correct UIC. Now you know why we were here until 6 AM.

The copy process itself was no simple task. Even if the submission form told the tape format and was correct, then several tries might be necessary. For example, if the submitter failed to specify whether 3.2 BRU or 4.0 BRU was used, then one BRU would have to be tried and if it didn't work the other would be tried. A lot of intuition and guess work was required if the format was not specified. We would try FLX, ANSII PIP, 3.2 BRU, 4.0 BRU and even DMP! Jim tells of one time when a format even turned out to be RMSRST. ("It mounted like an ANSII tape but PIP wouldn't read it!")

After several of the tapes had been loaded to disk and all of the submission forms had been checked, Charles and Vince switched to mounting the tapes (they did the "reel" work). Then John began the laborious task of reading all of the README files and summarizing them. For each UIC, John created a file from README info containing a one line description of each program. Then these files were sorted in UIC order and merged to form the final SIG tape contents summary. This data was then edited further and placed in [300,1]RSXF82TPE.DOC.

When the disk was finally ready, we made copies of the preliminary tape for each of us. Jim then took that copy back to his site to prepare the final tape. He will notify the members of the distribution tree by mail when the tape is ready. It is then the responsibility of each LUG librarian on the tree to contact his parent node to get a copy of the tape. If for some reason his parent node can't him a copy of the tape, he should contact his grandparent node.

After New Orleans, the number of copies had grown so large another distribution mechanism was needed. Phil, working through the DECUS office, created the SIG Tape Tree. He would collect the software at the symposium, take it back to Chicago for further work, and then make three masters: East Coast, Mid-West, and West Coast. A tree structure then distributed the tape among the Local User Groups.

The tree has never worked totally, only because of the probability of a break given the mobility of programmers. But usually after six to eight months, the tapes have made their way to every point in the United States and other DECUS Chapters.

The tape copy process was an informal, easy-to-use mechanism for RSX SIG members to distribute their software. Over the years, somewhere over 350,000 blocks of software have been distributed to thousands of sites. Some famous examples include TECO, SRD, RUNOFF, the KMS Fusion Kit, virtual disks, and the Software Tools.

Its very nature had a negative effect. The tape collections are large and not well documented and the process dropped individual RSX submissions to the DECUS library to almost nothing. This made it difficult for a particular site to get access to just one piece of software. These problems were somewhat addressed when an index to the tapes through the Spring 1981 Symposium was printed in the Multi-Tasker and SIG tapes themselves have become DECUS Library submissions.

Wishlists and Menus

At its first meeting and in the first newsletter, the SIG drew up a list of suggestions for future improvements in RSX products. This process occurred again and again in the next ten years with suggestions made at every symposia and and seven formal wishlist/menu ballots.

Sally Shlaer comments when reporting on the first wishlist ballot accurately summarize the needs and problems of this process (V4.1, July 1975):

Future Needs Workshop:

The RSX-11 Special Interest Group's workshop on Future Needs was held on Friday, April 18 as part of the 1975 Spring Decus symposium. Approximately 80 people attended this session.

The meeting was opened by a presentation by Sally Shlaer:

We are meeting this morning to discuss what features and enhancements we would like to see in the RSX-11 operating systems--along what lines would we like to see these systems develop. As a users group, it is especially appropriate that we address ourselves to these questions: we have as a group a wide range of experience of living with the RSX systems in real-world applications. This experience is not directly available to DEC except through us. I hope that DEC understands this and will respond to our requests if we speak as a group.

But there are particular problems in coordinating our requests. As an example, it has been proposed that a directive be provided to allow Task A to set or clear local event flags belonging to Task B. Some users need this capability to improve intertask communication; some, feeling it to be far too dangerous, do not want this facility at all. How do you balance effective multi-tasking in a non-hostile environment against reasonable protection between tasks? Perhaps a protection scheme based on UIC's could be devised that would satisfy everybody. But this is the kind of issue we must work out among ourselves before making perhaps mutually exclusive requests of DEC.

And we have a problem in representation. At DECUS meetings we see almost exclusively systems programmers with a sprinkling of usually highly sophisticated application programmers. This is not an average group of RSX11 users, so the polls we take here probably do not accurately reflect the needs and desires of the RSX community as a whole. There may also be some economic discrimination going on: it's possible that institutions operating on small hardware and support budgets find it difficult to send representatives to these meetings.

To try to get a wider picture of user needs, we tried a mail survey as a sort of pilot project; the March issue of the Multi-Tasker contained a questionnaire. We asked recipients to fill it out and send it in and to have their friends do the same. What did we hope to learn from this survey?

1. Would anyone respond? Would all responses come from systems programmers or would we get a wider spectrum?
2. How to write a questionnaire: What kinds of questions would elicit sensible answers? What kind of information could one gather in this manner and how could it be tabulated?
3. What kind of hardware configurations are being used for RSX11D? RSX11M?
4. Ratings of needs for specific features.
5. Comments and suggestions.

What did we learn from the mail survey?

1. It's a lot of work. Writing the questionnaire was not difficult; tabulating meaningful results is a real problem.

2. People will respond: we received 52 replies in 4 weeks, representing about 48 systems. The spectrum was reasonably good: the responses were generally sophisticated, but not so uniform as we see here at the meetings. There were many well-thought-out proposals; there were some bewildered answers. (By the end of the meetings we had received 71 responses; the following reports are based on all 71.)

The top three items from the various Menus show how SIG input was successful in some cases and less in others. Sally Shlaer and Mark Lewis headed the first two ballots. They were followed by Ray French (1978), Ralph Stamerjohn (1979, 1980), Legere Coleman and Jim McGlinchey (1981) and Louis Stoll (1982).

* 1975

RSX-11D (71 responses)

1. Cross-reference listings for Macro.
2. Multi-terminal MCR.
3. FCS/FCP document for the novice.

* 1976

RSX-11D (84 responses)

1. Indirect MCR facility.
2. System manager deciding what functions are privileged.
3. I/D space support. Memory map MCR function [tie].

RSX-11M (32 responses)

1. Multi-user (shareable) tasks.
2. System manager deciding what functions are privileged.
3. Protection against deleting installed task's file. AST mechanism to permit parent to be notified if offspring exits or aborts [tie].

* 1978

Combined (unknown response)

1. Develop faster method of distributing corrections to previous patches other than publishing the corrections article.

2. Support TECO, RUNOFF, and SRD. At minimum, always include latest versions on kit.
3. Provide adequate disk management, i.e. decent file backup and archival, allocation, date/time of last access.

* 1979

IAS (60 responses)

1. Extend software support policies (autopatch kits, hotline) to IAS.
2. Increase the ability to tune a system by providing programs to display system utilization, better tuning guidelines, dynamic tuning parameters changes, and hooks into the operating system for user-specific accounting.
3. Provide FORTRAN debugging tools for FORTRAN IV and FORTRAN IV PLUS.

RSX-11M (250 responses)

1. Provide FORTRAN debugging tools for FORTRAN IV and FORTRAN IV PLUS.
2. Provide a PDP-11 Pascal compiler.
3. Offer an "Installation License" which would allow an organization to pay a one-time fee authorizing it to use a software product at any site in the organization.

* 1980

IAS (171 responses)

1. Provide FORTRAN debugging tools for FORTRAN IV and FORTRAN IV PLUS.
2. Provide FORTRAN-77 compiler.
3. Add support for system tuning by providing utilities to monitor system performance and allowing dynamic modification of parameters which effect performance.

RSX-11M (1145 responses)

1. Provide FORTRAN debugging tools for FORTRAN IV and FORTRAN IV PLUS.

2. Offer an "Installation License" which would allow an organization to pay a one-time fee authorizing it to use a software product at any site in the organization.
3. Add support for system tuning by providing utilities to monitor system performance and allowing dynamic modification of parameters which effect performance.

* 1981

IAS (69 responses)

1. Document in detail the differences between IAS and RSX-11M as a guideline for the implementation of RSX user tasks under IAS and vice-versa.
2. Rewrite the RSX/IAS I/O Operations Manual with emphasis on more tutorial information for the first-time user and details of the RSX/IAS file system.
3. DMO should indicate what files are open and which tasks have files open, if a dismount cannot complete.

RSX-11M (794 responses)

1. SYSGEN documentation should have more information on system optimization. Options should be more thoroughly explained as to their impact.
2. A standard structured language should be chosen by DIGITAL and supported across ALL operating systems and calls to appropriate layered products.
3. Add support for default MCR Indirect Command Processor device and UIC.

Issues and Lobbying

The SIG occasionally had to act as a lobby group, focusing DIGITAL attention on key issues. Our most dramatic moment came in 1981 in Miami, when SIG members picketed for some sort of symbolic debugger at the Fortran Product Panel.

The SIG worked on a wide-range of issues in the last ten years. Besides a Fortran Debugger, the SIG has addressed Fortran compatability, RSX executive serves compatability, the stabilization of RSX-11D and subsequently IAS, autopatch service, and others.

The most recurring issue was SPR service. The quality of software maintenance has been a problem with RSX over the entire ten years of the SIG and unfortunately, one that we never resolved. At symposia and through the Multi-Tasker the subject of mishandle orders, slow response, printing quality, and most important, unpublished problems and answers occurred again and again.

The following extracts from the Multi-Tasker sample this issue. The first three are from a sequence in 1977 when the SIG suspended and reinstated SPR publication while dealing with DIGITAL on the issue of raw SPR publication.

SPRs -- An Announcement

V7.2, February 1977

SPRs -- An Announcement

Ever since the inception of the RSX-11 SIG, we have published SPRs submitted by readers. Initially we printed SPRs because Digital did not print raw SPRs in the Software Dispatch. We continued to print SPRs because it was evident that once Digital started to print raw SPRs, not all of those received were published.

At the recent DECUS/US symposium SIG representatives met with those Digital representatives responsible for the publication of raw SPRs in the Software Dispatch. As a result of that meeting the procedures used by Digital to screen raw SPRs for publication are undergoing revision. SIG representatives are participating in that review. Consequently, we are abandoning our practice of publishing SPRs in the Multi-Tasker. However, please continue to send copies of your SPRs to the SIG. We will attempt to track Digital's performance and publish statistics about their compliance with our understanding of the criteria for publication. In this way we hope that we can achieve our express goal of securing publication of all relevant SPRs. There are some categories of incoming SPRs that Digital will not publish. These include those marked 'Do Not Publish', duplicates of previously published SPRs, and SPRs that represent suggestions. The latter, the SIG will publish, if the author sends a copy to the SIG.

We hope that the new criteria adopted by Digital and the SIG participation in the implementation of these criteria results in a solution satisfactory to all. Naturally, if the new procedures fail to result in appropriate publication by Digital, then the SIG will resume its practice of publication of SPRs within the Multi-Tasker. We would appreciate any feedback users can give us with this effort. Please remember that it will help our effort if you continue to forward to the SIG copies of all SPRs you submit.

A related effort, also initiated at the Las Vegas meeting, is the establishment of a working group to improve the Software Dispatch. Bob Dolan has agreed to head this effort. You can help by sending the SIG information about problems you are experiencing with the Software Dispatch -- problems of content, please; the SIG can do nothing to help distribution problems.

FORUM:

This space is available for comments, arguments, complaints, questions, and generalized grumbling about anything of interest. Letters of praise are welcome too, but are assigned lower priorities.

1. I have written this letter as an answer to a query in the November

SPRs -- Further Developments

SPRs -- Further Developments

As part of our project to help improve the handling of SPRs by Digital, I have reviewed the current procedures related to the publication of SPRs, both raw and processed, in the Software Dispatch. In general, Digital does not publish articles resulting from SPRs that involve (1) unreproducible problems or problems for which insufficient information is provided, (2) user errors (although frequent user errors of a similar nature often generate articles clarifying the proper procedures), (3) unsupported software including superceded releases beyond the support termination date, (4) duplications of previously published information, (5) user-modified software, (6) suggestions, or (7) matters sensitive to the security of the system (e.g., an SPR that required publication of material that would permit the general user to access passwords of other users would not be published; rather, the solution would be distributed to field support personnel for transmission to affected sites).

Raw SPRs are not published if (1) they involve an unsupported version of the software, (2) the problem is invalid (e.g., the problem as stated reveals that the user did not apply previously published fixes), (3) the SPR as submitted is not reproducible or requires publication of more than one page of an attachment (the attachment must also be reproducible), (4) the problem has been published previously either as a raw SPR or as a published article, (5) the problem is stated unclearly so as to confuse the reader and cause more difficulties, (6) the SPR is marked "Do not publish", (7) it represents a problem of very limited interest (for example, an SPR reporting a difficulty with RSX-11D V6B output on an LA180 attached to a PDP-11/34 would not be published because neither the 11/34 nor the LA180 is supported in V6B), or (8) the SPR is a suggestion only. A major problem with the publication of raw SPRs involves the submission of SPRs to SPR centers other than Maynard. These SPRs, mostly submitted from Europe, are forwarded directly from the receiving center to the maintainers (in Maynard for RSX-11M/S, in Reading for RSX-11D/IAS). Consequently, these SPRs are never seen in raw form by the group responsible for publication of the Software Dispatch and, as a result, only SPRs from North America are published in raw form.

Of the 44 SPRs sent to the SIG since the first of the calendar year, 39 had not been published in any form as of the March Software Dispatch and did appear to meet the criteria for publication outlined above. At the current time the Software Communications office in Maynard is researching these 39 SPRs to determine exactly how they were disposed of and what reasons were given for non-publication. I hope to have a report on the disposition of these SPRs within a few weeks, so that we can rationally re-assess the SPR publication policy of The Multi-Tasker.

--Mark F. Lewis

SPRs -- Further Developments

SPRs -- Further Developments

As promised last month, we now have additional details about what happened to the SPRs that met the criteria for publication, but were not published either in fixed or raw form in the Software Dispatch. We forwarded copies of these SPRs, which represented almost 90 percent of the SPRs sent to the SIG since the start of the year, to the Software Communications office in Maynard, the office responsible for the Software Dispatch.

The word from that office is just what we users expected: decisions to publish or not publish specific SPRs have been made arbitrarily and capriciously, and generally did not follow the guidelines for publication outlined in the last Multi-Tasker. In some cases, e.g. all SPRs for IAS and all SPRs for BASIC under RSX-11M, whole classes of SPRs were barred from publication in raw form.

While you are recovering from this startling news, I should point out that my description of this state of affairs is a model of moderation, especially when compared with the language employed in the report from Maynard. All of the SPRs we identified, with a few exceptions that I approved, will be published in forthcoming Software Dispatches. In addition, the entire procedure for evaluating SPRs for publication is now under review. If you have any suggestions to offer, please fill out an SPR (be sure to check the "suggestion" box.) and mail it directly to Software Communications, Box F, Maynard, MA 01754. Also, please send a copy to the SIG for publication in The Multi-Tasker. As soon as the procedures and guidelines for publication of raw SPRs have been revised, we will publish them.

Five years later in June 1981, the SIG used its strongest formal weapon and passed a resolution that called for the same actions as expressed above. The resolution process was used infrequently by the SIG when other attempts at influencing DIGITAL had failed. Below is this resolution and the answer from DIGITAL, published one year later.

SPR Resolution

V14.6, June 1981

At the Spring 1981 Symposium in Miami, the RSX/IAS Special Interest Group discussed at great length and then passed a resolution calling for Digital to publish all raw and answered Software Performance Reports in the Software Dispatch. The text of the final resolution is below:

Given Digital Equipment Corporation's current policy of publishing only selected RSX/IAS SPR's and their responses, customers paying for this service are not promptly informed of possible errors, or their fixes. This results in degraded or incorrect system performance, or a duplication of effort to detect and fix problems.

Be it therefore resolved that Digital publish in each and every SPR for RSX, IAS, and associated layered products in the Software Dispatch as follows: all valid SPR's received by Digital on or before the tenth of each month, and not previously published, shall be published in the next month's Software Dispatch. Valid SPR's are those to which Digital is under contractual obligation to respond to. This resolution does not require publication of those SPR's for which non-publication has been

requested by the submitter.

Be it further resolved that Digital publish each and every SPR response for RSX, IAS, and associated layered products as follows: all SPR responses mailed to a customer on or before the tenth of the month shall be published in the next month's Software Dispatch.

The SIG membership realizes that additional cost may be incurred to support this additional service.

The resolution was discussed in great detail, however, the voting at the SIG closing session was overwhelming in support of it. In the discussion the following points were made in favor of the resolution.

- * By not publishing promptly unanswered SPR's, customers who encounter the same problem duplicate the effort of others in documenting and submitting SPR's. Also, without this information, sites may be unaware of potential problem areas in their applications.
- * By not publishing all SPR responses, many fixes to problems are not circulated to the general user community.
- * In general, sites felt that the more information they have on problems and fixes for RSX and IAS, the better they can maintain their systems and resolve problems.

Also, many valid problem areas were pointed out in the discussion.

- * The volume of SPR's received monthly is quite large. If all unanswered SPR's are published, the Software Dispatch will grow in size tremendously.
- * Unanswered SPR's may contain misleading information or actually be a user problem that is not obvious. Publication of these has a potential danger of misleading other sites, particularly new users.
- * The additional publication costs will almost certainly raise the price of the Software Maintenance Services.

The resolution process is very rarely used by the SIG and only when it feels it has no other method of resolving an issue. At this time, Digital is examining the resolution and preparing a response for the Fall 1981 Symposium. Any more information will be published in the

Multi-Tasker. We also invite further user comments on this issue for the "Speak Out" column.

DIGITAL Responds to SPR Resolution

V15.10, May/June 1982

In response to the resolution, DIGITAL has adopted the following new policy regarding what should be published in the Software Dispatch.

"As a general practice, all answers to Software Performance reports communicating a 'Correction Given' or 'Documentation Correction' response should be published in the appropriate software publication (i.e. SOFTWARE DISPATCH). Answers communicating a response other than the above mentioned should be published only if the answer provides relief to multiple members of the user community (e.g. provides a workaround or bypass to a problem not correctable in the current release of the product)."

This policy statement is believed to be currently in effect for all Digital software engineering groups. The DIGITAL response covers only the second part of the resolution. DIGITAL will still continue the policy of not publishing raw SPR's.

A summary of the entire SPR issue can be taken from the last part of the SPR survey done in late 1982.

SPR Survey Results

V16.3, September 1982

Q8: What Should the RSX/IAS SIG Be Doing?

"I don't know."

This comment occurred several times. It also reflects my own personal feelings. Many people commented that the SIG should not do Digital's job. Others wanted the SIG to do more, effectively starting its own Software Maintenance Service and go in competition with Digital:

"Yes. It should be made clear to DEC that software maintenance is an increasingly large percentage of DP budgets and it is also a consideration in evaluation of new and replacement systems."

"SIG role should be as a catalyst to improve DEC response

to problems in user community. SIG personnel are not DEC employees and should not be fixing problems for DEC unless that are compensated by DEC. Just keep jabbing them."

"Yes! The SIG should insure that the DEC software support personnel remain responsive to customer needs. DEC is getting extremely large and more difficult to deal with, it should be the SIG's goal to keep DEC responsive and aware of customer problems."

"The SIG should exert pressure on Digital to upgrade the Software Maintenance Services to a reasonable level. We feel that the services offered are not as professional as they should be. Too much time is being taken by our people to solve Digital's problems."

"SIG helps by being clearing house of gripes, workarounds, etc. - but still have long turn-around through sending in information and seeing it in print. Need online SPR/PATCH database."

"From the stories one hears, the software support is in a bit of a mess, coupled with their policy of selective publishing of patches. I have the feeling that you are hitting your head against a brick wall. If they improve the service it will cost more and some users (especially those on tight budgets) will drop out...The best you can do is push and shove them to improve their service, but I fail to see why the RSX SIG should become managers of DEC's software support. The other approach is for some brave company to collect the information and sue DEC for negligence and really shake them up."

Conclusion:

There were many more comments in the survey. I have tried to publish a representative sample and only lack of time prevents me from listing them all. There seem to be three major points to remember about Software Maintenance Services:

1. SMS works correctly much more than it fails. Many people are happy with some or all of the services and feel they are getting their money's worth.
2. SMS is a very large, complex system. There are no quick, free fixes that can be made. Anything that Digital could do to make the system better would cost you more. Anything the SIG could do would probably be about the same as punching a large bowl of jello.

3. Digital does need to remember how serious a software error is. If my RSX system does not work, either because of hardware or software problem, it is useless. SMS should strive for timeliness and completeness.

RSX/IAS Who's Who

It is estimated somewhere around 15,000 individuals around the world have belonged to the RSX/IAS Special Interest Group in the last ten years. The following Who's Who is a very special subset - those whose names have appeared sometime and somewhere in the Multi-Tasker.

Mark Lewis commented once that one way to make the SIG a success was to publish names on paper. The Multi-Tasker fulfilled this goal - 990 of you are listed below.

Abramson, Bob	Bailey, E.	Better, Ino	Bremner, R.W.	Caroom, Pat	Csencsits, John	Drummond, John	Foubister, D.
Ackroyd, M.	Baker, June	Bezeredi, Paul	Brendall, Peter	Carroll, Bill	Curley, Robert	Drummond, P.	Fox, Mike
Adams, Steve	Baker, Larry	Bhanukitsiri R.	Brender, Ron	Carson, Robert	Curtis, Dan	Duffy, Jim	Franks, Charlie
Adleman, Henry	Baker-Munton D.	Biallas, Randy	Brentlinger, T.	Carvalho, John	Cutler, Dave	Dunn, James	Franzini, John
Ainsworth, Alan	Baldwin, R.	Bickford, D.	Brewer, Colin	Casella, Daniel	Cutler, James	Duthie, K.	Fraser, Mike
Akerlof, Carl	Balkus, P.	Bielak, Richard	Brewin, Philip	Cassels, Julius	D'Camp, Bill	Dwiggins, Don	Freed, Robert
Albrecht, R.	Ball, Alan	Bino, Frank	Brice, Barton	Caviness, Don	D'Elia, Clark	Eagleston, John	Freepartner, B.
Alderman, John	Baltrunas, Carl	Birkenmeyer, D.	Bridge, Thomas	Ceci, Richard	Dakizaku, Susan	Earls, John	French, Ray
Ales, G.J.	Bandaru, V.R.	Birmingham, G.	Brillhart, D.	Ceckowy, B.J.	Dardy, Henry	Ebinger, Larry	Fretwell, Cecil
Alexakos, Louis	Banks, H.	Bishop, Mark	Broadway, Jon	Centmayer, K.	Davidson, John	Edgington, Clive	Friedberg, Carl
Alimonte, B.	Bardusch, Ted	Bismuth, Robert	Brodie, John	Chadwick, H.E.	Davidsson, E.	Edsell, W. F.	Friedrich, Kurt
Allan, D.I.	Barnard, Bob	Blackman, Garth	Brooke, Phillip	Chandler, A.K.	Davis, Doug	Edwards, Tom	Frimer, Morris
Allen, Lance	Barnes, Jim	Blake-Knox, M.	Brown, Al	Chang, Gareth	Davis, Fred	Egan, Janet	Frisbie, Alan
Allen, Nelson	Barnum, Thomas	Blum, Marion	Brown, Bill	Charleton, C.	Davis, Gary	Eigenhear, K.	Friszell, Bobby
Alway, David	Barr, John	Blunke, C.F.	Brown, Douglas	Checkowy, B.J.	Davis, James	Eisenhower, D.	Fryer, Raymond
Amon, Dale	Barry, Nancy	Bolef, Larry	Brown, Linda	Cheng, Raymond	Davis, Jim	Elderkin, Dave	Funk, Ken
Anderson, Frank	Bartelt, Mark	Bolson, Ed	Brown, Marvin	Chohan, Nick	Day, Tim	Eliezer, May	Gabelnick, S.
Anderson, Janet	Barthelemy, A.	Bombeke, E.	Brown, Randall	Christiansen, J.	de Jong, S.	Elkin, Keith	Gafford, Bob
Andler, Oskar	Barton, G.S.	Bond, Augus	Brown, Randolph	Church, Gregg	de Krieff, F.	Elliott, H.J.	Gale, Steve
Andruss, Duane	Barton, Louis	Booker, Martin	Brown, Reid	Cibelli, Julie	Dearing, Mike	Enes, Merv	Galipeau, Chris
Angel, Jill	Bassett, Gregg	Booth, Bruce	Brown, Russ	Cinque, Gregory	Dee Rolfe, R.	Engleman, Roger	Gallart, Walter
Angier, John	Bates, Ken	Borger, Frank	Browne, K.	Citko, Steve	Deibert, Mark	Errington, Niel	Gallup, Jeff
Angley, Kevin	Beadel, Edward	Bosco, Ronald	Browne, Ronald	Clark, Jerry	Dekker, Edward	Esfandiari, M.	Ganapathy, I.
Antin, Micheal	Becker, Teri	Bosh, Sam	Brownlee, Ed	Clark, John	Estep, Jon	Estep, Jon	Gandy, Hayward
Anttila, Erkki	Beckman, Dave	Bossert, Terry	Bryant, C.C.	Clarke, Pat	Estes, Larry	Evans, Dave	Gandy, Tony
Argue, David	Beckmann, Gary	Botman, Pieter	Buchanan, Doug	Claudon, Joelle	Evans, Richard	Evans, Richard	Gary, Mike
Arhart, Albert	Beckwith, Dave	Bottoms, Adrian	Burch, Ben	Clayton, Dick	Evans, Robert	Evans, Robert	Gasaglia, G.
Arsenault, J.	Beland, Micheal	Boufford, John	Burch, D.	Clayton, Paul	Everhart, Glenn	Everhart, Glenn	Gaughan, Art
Atherton, Harry	Bendall, Peter	Bowdle, John	Burton, Bill	Clayton, R.J.	Exelby, Harry	Exelby, Harry	Gemignani, John
Atkins, George	Bennett, Allen	Boykin, Wilber	Cael, Bill	Clem, Sheldon	Fair, Douglas	Fair, Douglas	Gent, Anton
Aurbach, Rick	Bentsen, P.C.	Boyt, James	Calahan, Brian	Cochran, Rick	Fallon, Fran	Fallon, Fran	George, Arther
Baatz, Eric	Bernstein, Gary	Bramer, B.	Campbell, Scott	Cockerline, W.	Farmar, John	Farmar, John	George, Dave
Bagge, Jacob	Beshoner, J.	Brandt, Josef	Cannon, Phil	Cohen, Gerson	Fauber, Mike	Fauber, Mike	Geraghty, M.
Bagley, Bill	Best, Dave	Branton, Bob	Cantor, Dave	Cole, Vernon	Feldman, Bob	Feldman, Bob	Gerrish, Blair
Bagwell, Phil	Bethe, Kitty	Breitsmid, T.	Caplan, Ira	Coleman, Legare	Fenrick, Mike	Fenrick, Mike	Getzinger, Tom
				Collins, John	Ferris, Dewayne	Ferris, Dewayne	Geyer, Lothar
				Colussi, Sandy	Fersch, Bob	Fersch, Bob	Gezelter, R.
				Cook, Dennis	Findlay, W.	Findlay, W.	Gibson, Carl
				Coombes, Terry	Fine, James	Fine, James	Gibson, Clay
				Cossette, A.	Firoozmand, F.	Firoozmand, F.	Giesler, Gregg
				Costello, D.P.	Fischer, Jeff	Fischer, Jeff	Girard, Randy
				Covert, John	Fischer, R.	Fischer, R.	Girdler, Deb.
				Covey, John	Fisher, Richard	Fisher, Richard	Gladden, Doug
				Cragg, L.A.	Flippen, B.	Flippen, B.	Goering, R.
				Crane, Phil	Fong, T.	Fong, T.	Golan, Thomas
				Crane, Ted	Ford, W.	Ford, W.	Golden, P.
				Crider, John	Forrest, M.	Forrest, M.	Goldsmith, Mark
				Cross, Ken			Goldstein, A.
				Crowell, Alfred			Goldworm, Matt
							Gonter, Steve

Goodman, Jess	Haugen, Richard	Isakson, John	Kiestler, Jerry	Levine, Micheal	McCormick, Bob	Moore, Dale	Ouwehand, C.
Goodman, Joan	Hay, Bill	Jackson, Ted	King, Mark	Levine, Pam	McCormick, Jan	Morgan, Mike	Overby, Ronald
Goodman, R.	Haynes, Robert	Jacobowitz, F.	Kinnear, Kim	Levinson, E.	McCormick, Leon	Moriarty, B.	Paavola, Steve
Goodpasture, C.	Hazard, Bo	Jacobs, Donna	Kirkman, R.	Levitt, Ken	McCray, Art	Morse, Kathy	Pahaut, Patrick
Goranson, Dean	Heiser, Laine	Jacobs, Warren	Kittell, R.	Levy, Eric	McCue, Kevin	Mortimer, A.	Painter, Paul
Gorlen, Keith	Helgesson, H.	Jacobson, Van	Kittle, John	Levy, John	McCulley, Bruce	Mos, W.	Pak, Rayleen
Gospodnetic, D.	Heller, Martin	Jahn, K.D.	Klein, Arthur	Levy, Walter	McDaniel, Larry	Moulton, Greg	Pallett, Nancy
Gracz, Pat	Helman, W.P.	James, Micheal	Knott, Ernie	Lewis, Mark	McFerrin, Paul	Mueller, Ed	Palmberg, Terry
Grandi, Steve	Hendersen, J.	Jenker, H.	Knox, Margaret	Lezark, A.P.	McGlinchey, Jim	Mueller, Martin	Palmer, Jim
Grandie, R.E.	Hendersen, Ken	Jenkins, Roger	Kobrin, Robert	Lieberman, E.	McGowan, Larry	Muir, W.S.	Papajcik, Ron
Graves, Wayne	Henning, J.	Jenkinson, John	Kocsis, Art	Linesman, R.E.	McHardy, Lori	Mullen, Jim	Parker, Charles
Gray, Barry	Herbert, Niel	Jensen, Dennis	Koenig, E.V.	Lippert, Del	McHugh, Patrick	Munson, Bill	Parker, D.B.
Green, Gail	Heywood, Fergus	Jewell, C.S.	Koenig, Wendy	Liston, Donald	McIndoe, Bruce	Murphy, Mike	Parker, Don
Grey, Tim	Hie Lau, Kah	Jewell, D.M.	Kogan, Leonid	Little, Bill	McKee, William	Murray, Reed	Patterson, Don
Gridler, Debbie	Higgins, Mike	Jobes, Steve	Koontz, Jerry	Liverman, Greg	McKenzie, M.J.	Nagy, Frank	Patterson, John
Griffin, Bill	Hinchliffe, Ray	Joggerst, D.	Korendyk, Bill	Livingston, J.	McLain, Bruce	Natowirz, J.	Patterson, W.
Griffin, M.	Hinterlang, Leo	Johnson, Doug	Korngold, Eric	Lomasky, Brian	McLawhon, G.	Neal, Clay	Pearce, Hilary
Griffith, R.	Hoalman, A.	Johnson, Eric	Koski, Jorma	Lopp, Dan	McMahon, Bill	Neale, Mike	Peckham, Ance
Griffith, V.	Hodges, Gene	Johnson, Glenn	Kowalczyk, B.	Lord, Steve	McMicheal, P.	Neeland, Jim	Pedersen, F.
Groot, C.J.	Hodson, Julia	Johnson, James	Kredier, Don	Lott, Robert	McNaughton, B.	Nelson, Gary	Pedersen, W.
Grosshans, Dan	Hoekstra, John	Johnson, Ken	Krejci, Hank	Lowery, David	McNiesh, Andy	Nelson, Jay	Penner, Frank
Grugging, Jos	Hoffing, Glen	Johnson, Mark	Kremer, John	Lubell, B.	Mead, Cy	Nelson, Jeff	Penny, Leonie
Guerrini, W.	Hoffman, P.J.	Johnson, P.A.	Kristol, David	Luster, Edmond	Mead, Paul	Newcom, Bill	Perkins, Dan
Guidi, John	Hoge, John	Johnson, S.	Kromme, J.G.	Lynch, Hal	Mearns, Bob	Newell, Steve	Perlo, Art
Guralnik, Ken	Hogquist, Karl	Jones, Richard	Kuczek, Art	Maarse, Walter	Medlin, Terry	Newland, R.	Perricello, V.
Gwynne, Malcolm	Holeman, C.W.	Jones, Trevor	Kuklinski, C.	MacDonald, Ken	Meehan, Mike	Newman, Gerard	Perron, Rich
Haalman, A.	Holler, Richard	Joyce, Mark	Kuriakose, T.	Macfarlane, R.	Meisenburg, Dr.	Nguyen, Le	Perrott, P.E.
Habib, Ludmilla	Holtz, I.	Kabo, Mike	Kyle, Bill	Mack, Robert	Menard, Jacques	Nichols, Herb	Perry, Dennis
Hafen, K.D.	Holzman, Robert	Kaila, Kaarle	LaCroute, B.	MacSween, Bill	Menozzi, Bruce	NNanwubar, M.E.	Peterson, S.
Hagmeier, Jerry	Hoover, Rick	Kaltseis, J.	Ladd, Steven	Mahaney, T.	Mercer, Colin	Norby, Robert	Pettinato, Rod
Haley, John	Hopp, Jim	Kaplowitz, L.M.	Ladha, Minaz	Manges, Wayne W	Merrell, Gregg	Norton, Bill	Pfeiffer, P.
Hallahan, F.	Horick, Robert	Karin, Matti	LaFramboise, L.	Manzgold, Robert	Merritt, P.	Nunnally, John	Phillips, Ceib
Hallberg, Don	Horn, Larry	Karin, Sidney	Lagerlund, T.	Mann, John	Merusi, Donald	Nusbaum, Robert	Pick W. S.
Halley, Ferne	Hovland, Harald	Kashdan, Norman	Lamatrice, Mike	Mantle, Mickey	Mess, George	Nussbaum, Bob	Pierart, M.
Ham, Charles	Howatt, W.T.	Kasper, Jerome	Lampe, Richard	March, Warren	Metcalf, G.T	O'Connell, John	Pierce, Hillary
Hamilton, Dean	Hsu, Chia	Kasson, JoAnn	Lampen, Steve	Marisa, Richard	Mickelson, Carl	O'Connell, Todd	Plozman, George
Hamilton, Jeff	Huang, Hai	Kauffman, Jim	Lanting, J.F.	Marshall, Greg	Mickey, Donald	O'Donnell, S.	Plunkett, G.
Hamma, George	Hudson, W.P.	Kaur, John	Lauten, Guy	Marteinsson, F.	Miles, Rodger	Oberlin, Jim	Pollack, Eric
Hanks, Jerry	Hughes, Brian	Keefer, Frank	Lawler, Jane	Martin, Bob	Miles, T.	Oberman, K. R.	Pollack, Matt
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 Holeman, C.W. Request for RATFOR experiences
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 Biallas, Randy Request for Gould ES1000 software
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 Rowland, Phil Request for RT07 drivers
 Dee Rolfe, R. Request for English/Japanese terminal
 Young, Leo Request for help with TU58 problems
 Whiten, W.J. Request for improving terminal performance
 Browne, Ronald Request for magtape software for DEC-10/RSX
 Thomas, Robert Various workarounds for RMS-11K
 Stamerjohn, R. Summary of Fall 1981 RSX Product panel
 Bossert, Terry Transcript of Fall 1981 IAS Q&A session
 Stillwell, R.N. Fortran interface to universal libraries
 Johnson, Ken Multiple writers to FCS files
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 Palmer, Jim Library file compression command file
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 Fraser, Mike Report on Virtual Disk Working Group activities
 Burton, Bill Formation of Retired Version of RSX WG
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Levine, Micheal Corrections to SIG tape INDEX program
 Yovanovich, A. Adding new directives to RSX11M
 Silverman, Alan Modifying HELLO so all users are privilege
 Stamerjohn, R. Various reported problems with Autopatch E
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 Knox, Margaret RSX11M V4.0 field test report
 Baker, Larry Reducing the size of Fortran programs
 Doran, Chris Last ditch methods for file recovery
 Caplan, Ira Command files for tape operations
 Webb, Ian Notes on RSX11M pool fragmentation
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 Levy, Eric UNIX-style scheduler for RSX11M

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Stamerjohn, R. Call for Multi-Tasker volunteers
 Hamma, George RSX Chairman runs for DECUS executive board
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 Burton, Bill Patches for old versions of RSX11M
 Viana, Tom Announcement of seminars offered in Atlanta
 Johnson, P.A. Request for 4010 graphics package
 Willis, Raymond Interfacing to Technicon Autoanalyzer
 Everhart, Glenn Fixes to SIG tape DDT code
 Bismuth, Robert Using DSC between different types of disks
 Stamerjohn, R. Wrap-up notes on the Fall 1981 symposium
 McGlinchey, Jim Spring 1982 DECUS symposium plans and abstracts
 McGlinchey, Jim Eating and dining in Atlanta
 Bismuth, Robert Field test report on RSX11M V4.0
 Mitchell, Bruce Idle terminal monitor for RSX11M
 DiCara, Victor Fortran wild-card filename lookups
 Knox, Margaret Migration from RSX to VMS, planning stage
 Mickelson, Carl Using standalone BRU

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 Stamerjohn, R. Common question from new users
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 Neeland, Jim Fall 1981 SIG tape distribution, tree
 Wood, Bill Corrections to ICR Fall 1981 tape submissions
 *Covert, John Topological walk through an overlaid program
 Everhart, Glenn Theory of PDP-11 interactive debuggers
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 Hoffing, Glen Making use of RSX11M-PLUS secondary pool
 *Donoghue, Brian How the RSX11M shuffler works
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Green, Gail From Five Years Ago column
 Tompkins, Paul DECUS Library News column, new submissions
 Bailey, E. Working Group News column
 DiGiacomo, D. Help Yourself column
 Doran, Chris Answer to question on HP 7221 support
 Tomaszewski, K. Answer to question on REGIS color output
 Tomaszewski, K. Answer to question on autodialer
 McIndoe, Bruce Request for information on RL01 driver
 Ourston, Dirk Request for CA LSI2/20 cross assembler
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 Keysay, Jim Request for IAS support of RM80
 DiGiacomo, D. Common spelling errors RSX users make
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*Paavola, Steve Note on future status of RSX11M
 Green, Gail From Five Years Ago column
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 Bailey, E. Working Group News column
 DiGiacomo, D. Help Yourself column
 Demers, Ken Answer for 4010 graphics package question
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 Foubister, D. Request for RSX11M V4.0 of PRESERV
 DiGiacomo, D. Trick to trim task image disk size
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 Sventek, Joe Home directory support for RSX11M
 Nagy, Frank Performing RSX11M V3.2 sysgens on VAX/VMS
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 Downward, Jim Enhancements for KMS kit for RSX11M V4.0
 King, Mark Process Control working group questionnaire

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 Jewell, D.M. Request for hanging up idle DZ11 lines
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 Rowland, Phil FOR INTEGER*4 math routines
 Isakson, John Using RSX11M V3.0 RMDEMO with RSX11M V4.0
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 Williamson, M. SPR on RX02 looping if no diskette
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 Isakson, John Building OMS1 Pascal-1 cluster library
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 Strait, Dave Building loadable drivers with loadable data
 Lederman, B.Z. User experiences with RSX11M V4.0
 Fretwell, Cecil Generating manuals from RSX11M help files
 Doran, Chris Recovering corrupted ANSI magtapes
 Tomlinson, Matt Logic of RSX11M powerfail restart
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 Drummond, John Transcript of Spring 1982 IAS Q&A session
 Coleman, Legare RSX/IAS SIG 1982 menu and ballot
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 Liston, Donald Flaws in RK05 disk pack cleaning kits
 Stamerjohn, R. Resignation as Multi-Tasker editor
 Coleman, Legare Update on SIG activities
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 Jobs, Steve Request for communications to NCR 751
 Bailey, E. Working Group News column
 Burton, Bill Setting EDT V3.0 defaults
 Jenkinson, John IAS Working Group changes focus
 Mickelson, Carl User written drivers and RMS record locking
 Liverman, Greg TU10 bug in error handling
 Seydel, Donald Installing Dungeon on RSX11M
 Grandi, Steve Notes on the TDx catch-all task
 Preciado, Steve It's in the Code column
 Legensky, Steve Note on uses of the PIP /RM switch
 Mazzoni, M. Adjusting system memory size for RMDEMO
 Kobrin, Robert Autobaud detection for Gandalf's
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 Jenkins, Roger Problems bringing RSX11M V4.0 online
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 Gale, Steve Booting RSX11M+ from foreign disks
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 Hoekstra, John Reflections on Datatreive-11 V2.4 usage
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 Koski, Jorma RMDEMO I/O page display
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 WeBlatt, David Notes on DIRALL.COMD and RUNOFF
 Downward, Jim Update to SYSLOG in KMS kit
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 Pak, Rayleen Request for DQ11 support support
 Taskis, C.B. Request for peak analysis software
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 Kabo, Mike EDT tab shifting keys

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 Hoekstra, John FMS trick to dynamically change fields
 Coombes, Terry System state support for 32KW tasks
 Torstendahl, S. Fixes to Swedish Pascal for RSX11M V4.0
 Roth, John Further notes on RX03 problems
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 Mickelson, Carl Wrapup of the BRU sorting bug
 Watson, Alan RSX11M to RSX11M-Plus migration
 *Jenkins, Roger The night of the SIG tapes
 Cross, Ken Unlimited keywords in TPARS
 May, Eliezer Protecting systems through use of CCL
 Burch, D. RSX11M driver for DR11W networking
 Stamerjohn, R. RSX11M V4.0 sysgen experiences

Word Search Game

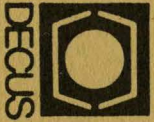
Find the following list of words. If the word is used more than once, it will be found more than once in the game.

i.e.: RSX-11M-PLUS would not count for both RSX-11M and RSX-11M-PLUS. RSX-11M will be found somewhere else.

ADDENDUM
ANNIVERSARY
BOF
BADGES
CAMPGROUNDS
CLINIC
COFFEE BREAKS
DECUS
DECUS STORE
DIGITAL
EXHIBIT HALL
FALL '83 SYMPOSIUM
FALL '73 SYMPOSIUM
FIRST TIMERS
HACKERS
HANDOUT
HARDWARE
LAS VEGAS
LORE OF RSX
LUNCH
MAGIC SESSION
MGM GRAND HOTEL
MULTI-TASKER
NEW USERS
OPENING SESSION
MENU
MESSAGE BOARD
PRODUCT PANEL
Q & A
RECEPTIONS
REGISTRATION
ROADMAP
RSX SIG
RSX-11M
RSX-11M-PLUS
SESSIONS
SIG TAPE
SOFTWARE
SYMPOSIA
TAPE LIBRARY
WISH LIST

RSX CELEBRATION WORD SEARCH

S A I Q H W I L A H R I B C X 8 3 7 3 W P I R Y X V N W P Q O B X M T Y G H M Z
 F 1 1 P W Y T B X V M H G L G H X Y 7 W O N O B M S D W H P D D S 8 3 P 1 1 M F H
 E K P O L W U T M X C H D I G I T A L I M O Z W I R Y T H G D F H A L M 1 1 W X A
 W R A M R N G 1 1 8 3 M S B N S H R U N O I T A R T S I G E R E X M E 1 1 I C N K
 P W O B N Z W Q P 1 1 X B Y T M X I W I O S E B P O Q O B V X Z M I W E 1 1 T I B K
 1 3 V A X M I L Q W S R E M X Q 8 3 M Z X S E B G H M D A W 3 P R U B M S W I E
 T B M N D P M K A R B R T Y M B G H M 3 X E W Y T B N D W D 7 W X P I Q M T O R
 I O B N W M W C Z M P E U E E E W P 7 Q P S X M R 1 D 7 3 U G W Y T B M X S D S
 W B N I O A A R X S 1 1 B M N Q S P T V Z C I R C E X W O E A E G A D 1 1 3 7 8
 W C N V 1 1 L P X P O N D S U 8 3 S N X V I A O N V W M 1 1 S U S P Q D 3 8 C B
 U N D E T Y B N G H W U M W M P Q I A E W G B D A L R I B N X M I R U M B W U Q
 C Y Y R M B Q I T Y B G H U 1 1 I B X G K A U Z M W U Q O P X D M W C P P 7 3 F
 G B X S B P Q Z T Y V G J I V G H B J E U E M B Y C K U S E L D U Q 1 O D C Y P L S
 A C U A P L S W X V N S C X W Y T H B M S O A R T E T X A S Z D V A B S X M X
 I 3 K R E C E P T I O N I K Z P I O N W C S O A R T E T X A S Z D V A B S X M X
 S U B Y U B X E D P W B N E A K Y I W Y B C M A R D V O C I H U W T N B M I Z 1
 I B X E M Q U B M Q P T I Q V E O U G A B R A L R B I H 3 1 C T 8 3 F S P N O 1
 C I V L B X U Y G I B H L W T Y R Y 3 1 1 8 Z O E D M D P T 3 7 I C O W B H W M
 1 1 W I L T S B A L U W C A N R U B 7 V W 3 P P Q I B N P 1 1 G H B W Z M U I P
 1 J E Q Y 3 P X T S I 8 7 B M X W R E G E R G Z V Q R B C A V U W P B N I U X T N L
 U C G T 8 B 7 U I P M U L T I T A S K E R O G Z M O N R W O C 3 Z Q I H M T D U S
 B O C C L I W O V X I 1 1 X W N R P I B D Y F X B P L E B G T Z P H 8 S F B X P A S
 G I L O W D G B Y P 1 T K D S G H F C A P F V Q L N W M I W D H O O 1 1 D E I C
 T A H I N C G H A P X M W P Q I B B A M P Q O C Z P A G 1 S Y P B C O N C W H G
 F E B A W D G H X C S O E F P L W X S T I P Q C Q U I M T R M L E O D S H I W S
 W X H I R T X G H A R 1 1 Q 3 U O Z K D S O W Y T I B N W Y W X G Y Q P T I B R
 G B X E Y D U P Q I X Z K 8 7 I W R B D A 1 I B N O I S S E S E S G N I N E P O W E
 A S T I N C W Z N B H G H 1 P D M K E R Y 1 D U W I S 3 X V N H H Q P U P K Z W
 K I S Y M P K A W G N A P I W I B C K O P L S D Q B 7 7 X G H Q P K T I R T H S
 8 3 N I G A R M R T I C Q U I X U W Z K F T E A B L X E R D C A M S B Z H C A N
 J U O X B I T Y Q E M X D W Z S E M X I W R P B L 1 1 C G E P N I X W O C B E A
 B K I D F I R S T T I M E R S V K Q U R P A S A X U 1 1 F C A L A C J F N M I D
 Y N S U P E C A L I W H I T A K O D E V E K F X P O R A G U H I A R V S U X K N
 G W S 1 1 V P W I B H W O M W G H X K L E W Z B O W T B N S S O N C R I L C V A
 B I E M K L I O 1 1 C R F G K N X G E R P W V G E Y X C I O B X W E K G B X C S
 P K S P G D X I W O E B A K W P I C A 1 1 B W Q O D H G W P V E M S Z I 3 8 G N N
 O C E U W A G J W P W X I B M N Q V E I C 1 1 S B Q K B X A M X I 1 U 7 3 X T S I G O
 X E N E U T C Y N X O D S W U N T A P E L I B R A R Y E V O W P 3 Z 1 1 O S A I
 G A X P O W G I A P M W T G Q F B Q P W O E U T I S M X Y E Z G H D K R A K E T
 V B N A I W M I W X I P T H O P W H G K S X C I S N S D N U O R G P M A C X P S
 C G I W H B 1 1 S A G E V S A L E X 8 3 L L P Q R B K W U B I Q O X D H R O A E
 P Q I R Y B M D H G K D H G A I W 1 1 M A N W I B N A M Q Z X P W I B M Q I B U
 R S T Q U I C H G A L S S W I B Q P B E D K J H L A W I B N W K W D G L V B U



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