



IDIMS Newsletter

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IDIMS USERS FORM NATIONAL ASSOCIATION

IDIMS users from all over the nation met in June to form an association (IDIMS User's Group) that would allow them to exchange information and share resources. Sponsored by ESL, the first annual meeting of the IDIMS User's Group was held June 14 and 15 at the Le Baron Hotel in San Jose, California. A total of 43 people participated. Among these were 16 representatives from all of the IDIMS installations, representatives of IDIMS component manufacturers and various individuals active or interested in digital image processing. There are currently 12 IDIMS systems in operation; 10 in the field at separate locations and two at ESL's facility in Sunnyvale.

The purpose of the User Group meeting was to promote the interchange of ideas, applications, and solutions to common problems in the field of digital image processing and analysis. During the meeting there were seven customer presentations on the use of IDIMS at their facilities. In addition, ESL gave three technical presentations and answered questions from the group. Hewlett-Packard also gave a presentation.

USER LIBRARY ESTABLISHED

The IDIMS users present decided to establish an informal organization which would meet annually. The NASA Ames Research Center was chosen as the site for the next meeting in June 1979. Ethel Bauer, Project Manager at NASA Ames, volunteered to act as Chairperson for the group during the coming year.

A major outcome of the meeting was the agreement to establish an IDIMS User Contributed Library, with ESL acting as the clearing house and distribution point. This library will consist of software developed exclusively by IDIMS users and will be totally separate from the IDIMS software which ESL distributes and maintains.

"Forming and supporting a User's Group is a new activity for ESL and we approached it with a lot of enthusiasm. The effort was well worth it and we're really pleased with the results of this first meeting," said Andy Failla, IDIMS product manager. "We've seen our IDIMS customers establish or, in some cases, reinforce communication among themselves. We anticipate lots of feedback from the group on what they want and need in the way of product development."



Over 40 people attended the first User's Group meeting at the Le Baron Hotel.

NASA AMES SPONSORS NEXT USER'S MEETING

It seemed apparent at the first IDIMS User's Group meeting that useful information was being exchanged. Thus, the group chose to continue as an informal organization with another meeting scheduled sometime within the first half of 1979. Because of the proximity to ESL, NASA Ames Research Center in Mountain View, California has offered to host the next meeting. Although we can't duplicate the good food at the Le Baron Hotel, we can provide a conference room and tour of the areas that may be of interest. The tour could include inspection of our remote sensing analysis support hardware, the high altitude research aircraft (U-2), and the supporting data facility.

Later this year, we will be sending a letter to the participants of the first IDIMS User's Group meeting, detailing the duties of the chairperson. Any suggestions will be welcome. I do hope we can serve as a user focal point concerning common IDIMS of interest throughout the year. Call 415-965-5897 or FTS 8-5897. This newsletter also offers a more open forum for user communications. Hope to see you at the next IDIMS User's Group meeting. The timing of this meeting, hopefully, will compliment some other conference or activity in the Bay Area.

Ethel Bauer
NASA, Ames Research Center



Versatec printer/plotters are now at work on IDIMS interfacing with the HP3000 host computer.

PIC O' THE PLOT

New Printer/Plotter Developed

A recent ESL development allows interfacing the Versatec printer/plotter to the host computer and has established the new IDIMS function, PICPLOT. This function provides standard size output of 26 or 33 graylevels by using a digital halftoning technique on any single band image or classified image. The black and white result can be scaled by preprocessing the basic images using existing IDIMS functions. Multiband images are handled one band at a time.

SIX NOW AT WORK

Six Versatec printer/plotters are now at work in IDIMS facilities. Three are widebed (22 inches or more) and three are narrowbed (11 inches). All six can also be used as the system printer. One of the new installations will also have CRT terminal display data hardcopied to its printer/plotter via a Versatec controller.

Under a separate development, ESL is now converting Versatec's graphics software package to an HP 3000 utility. This package, HPUV7, will support programming with pen plotter and electrostatic plotting commands.

TRW Merger With ESL Benefits IDIMS Users

ESL became a wholly-owned subsidiary of TRW on June 8, 1978, when almost 90% of the voting shareholders approved the merger. The vote came after eight months of negotiations with TRW's board of directors. ESL will continue to operate as a separate entity, and will keep its corporate name.

The merger can only have a good effect on the IDIMS product line since it brings together complementary activities: TRW has emphasized ground stations for LANDSAT data while ESL has emphasized exploitation stations. TRW's 300 locations worldwide will give IDIMS greater exposure. Also, TRW recognizes and supports IDIMS as a product.

IDIMS will benefit from TRW's pioneering work in managing software development and maintenance. Also, look for further expansion of the applications library since TRW is very active in algorithm development.

ESL now reports to TRW's Defense and Space Systems Group (DSSG). Their headquarters are in Redondo Beach, California. DSSG has been active in defense and space programs since 1954.

HIGH SPEED, HIGH DENSITY TAPE DRIVES

High speed, high density tape drives will soon be a new feature of IDIMS.

A prototype has been developed using tape drives manufactured by Kennedy Corporation that will store data at 800 to 1600 bits per inch and run at a speed of 125 inches per second.

The new tape drives, installed on the HP 3000 host computer, are about two and three quarters times faster than the host tape drives.

ESL is also currently investigating the possibility of using even faster tape drives than the Kennedy model.

Units have been purchased from both Telex and Storage Technology. The Telex model is capable of storing data at 1600 and 6250 bits per inch and at 6250 bpi is about four times as dense as the HP 3000 tape drives. They also run at 125 inches per second. The ESL controllers for these drives are currently in the printed circuit fabrication stage and should enter the test phase in about six to eight weeks.

ESL expects these new tape drives, which will be available to all IDIMS customers, to speed-up the normal input and output of images by a factor of ten.

Four units are already scheduled for delivery, with the potential for eight to ten more being delivered in the next six months.

IDIMS Applications—

Oil Exploration

ESL recently had an opportunity to investigate a new application for IDIMS in the area of scanning electron microscopy, specifically in the field of oil exploration.

Researchers in palynology, the science dealing with modern and fossil pollen and spores, are using the scanning electron microscope to study the fine structure of these microfossils. Pollen and spores from plants have several characteristics that make them interesting to study. They have definite physical markings and shapes that are species-specific, that is, each species of plant produces a unique "species" of pollen. They are also very durable, able to survive hundreds of millions of years (if not disturbed too much), being composed of material that is very resistant to oxidation and decay. They can therefore be used to date sedimentary rock samples and used to determine the climate and environment the sample came from.

ANALYZING PALYNOFLORA

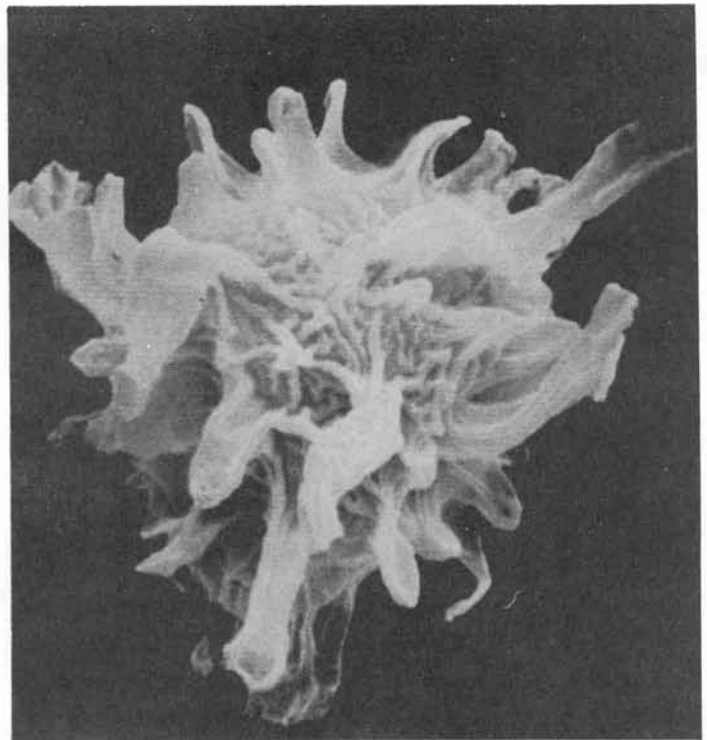
The significance of these characteristics is that the analysis of the palynoflora (the mix of microfossils) in a sample can aid in the search for those ancient environments that were most likely to become oil fields or other fossil fuel deposits.

Although light microscopy is sufficient for most studies in stratigraphic palynology, a scanning electron microscope (SEM) is necessary for the study of the fine structure of the outer wall of the pollen or spore grain, called "sculpturing." It is suspected that certain intraspecies differences in this sculpturing may indicate a difference in climate or environment between identical plant species living during the same period of time. With this information a researcher could fine-tune his analysis of a sample.

IMAGE PROCESSING

Because vibration, sample preparation, and other effects (such as magnetic fields in the sample) can distort the SEM image, there may be an opportunity in this area for image processing. In a recent session, an SEM was digitized on a scanning microdensitometer and put through some basic processing routines on IDIMS. The results were impressive and pointed the way to further study of this application.

In addition to image processing, palynology research can benefit from an integrated data base involving IDIMS, which could be used in cataloging and retrieving information and images.



Pollen and spore fossils such as this one are currently being studied with scanning electron microscopes as a potential method for locating fossil fuel deposits.

ONE-KEY COMMANDS INCORPORATED INTO IDIMS

A new functional release of IDIMS software (version 4.1) began a field test phase at NASA Goddard Space Flight Center in September. Most of the changes incorporated into this new software version for IDIMS are geared toward making the analyst's job easier as well as allowing a relatively inexperienced person to use the system effectively.

ONE-KEY COMMANDS

The new version incorporates a menu mode (one-key commands) that will permit an individual site to develop its own approach to IDIMS. A major benefit of this mode is that it allows users to keep complex commands on file that can be recalled and performed by using one key. The menu mode will only be available to customers using HP 2645 terminals. Other changes include an increased number of ASAP functions, incorporation of an HP 3000 Editor, and an arithmetic processor, which acts as a calculator. It will also have a loop capability, which can keep track of several commands and variables simultaneously.

This new software will also be upgraded to be compatible with the new HP MPE-III internal software which will eventually replace the MPE-II version.

LANDSAT TAPE FORMATS CHANGED

The EROS Data Center will soon start distribution of the LANDSAT Computer Compatible Tapes in the new EDIPS (EROS Data Center Digital Image Processing System) format, developed by John Tabor, program manager for TRW, probably at the beginning of the new year. Although, the details of the data formats are not firm, preliminary information indicates the following:

- LANDSAT C tapes will be in the new format; a decision will be made by EROS later this year on the LANDSAT B tapes.
- Scenes can be ordered with or without geometric correction.
- Scenes can be ordered in either line by line or band by band format.
- Scenes can be ordered in either 800 or 1600 bpi format.

A new IDIMS function, ENTERLS is being written to allow the entry of these new tapes into the IDIMS system and to account for the various options the user has in ordering tapes. ENTERLS will be available by the time the new tapes are distributed. ENTERLS will have an option to remove the synthetic pixels, as PLENTER does now.

One of the unknown items about the new format tapes is whether sufficient data is present in the header record of the uncorrected tapes to construct the C-file used by PGC to do geometric correction. ESL will keep the users posted on any further developments in this matter.

Maintenance Software On Schedule

A new IDIMS software maintenance release (version 2.53 for Series II and 1.53 for Series I computers) successfully completed the 30-day acceptance test. A copy of the software release along with corrected source code, documentation, and manual updates was distributed to all IDIMS users under maintenance contract in late September.

Some of the functions and utilities that have been repaired or enhanced and included in this release are: CONTROL, TAPECOPY, CONTABLE, LOGICAL, RECLASS, ENTER, IDENTER, DIVERGE (utility), DIVERGE (IDIMS function), MODTRANS, STAT, STRATCOPY, AUTOCOR, ALLCOORD, TRANSFORM, and STRATA. Specific information describing the nature of the repairs and enhancements is included in the release package.

New Interactive Display Selected For IDIMS

ESL is supporting the development of a new display system by De Anza Systems. De Anza Systems was selected from among ten vendors who bid on the contract. In addition to current capabilities, the new display will provide scroll, split screen and zoom functions, which work independently on each refresh memory, allowing much more responsive data handling. The display interface is designed to be as fast as the Hewlett-Packard host computer so that images can be loaded at maximum speed.

NEAR REAL TIME PROGRAMMING

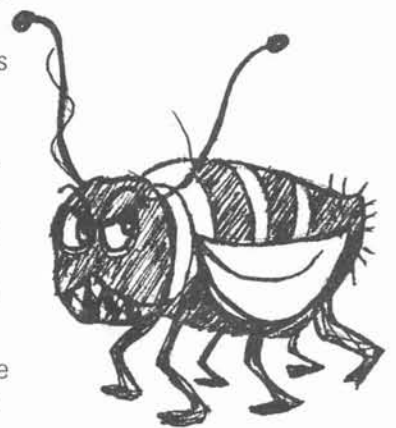
The display also contains an LSI-11 Microprocessor, which allows local programming of display features. The LSI-11 features a feedback loop/pipeline processor architecture where, for example, special convolution algorithms can be performed in near real time.

The display is modular so it can be purchased in any of a variety of configurations and improved upon later. The unit that will be used at ESL will be able to demonstrate all possible options.

The De Anza display will join the COMTAL Vision One as part of the IDIMS products and peripherals. The new display will be generally available for delivery with IDIMS in the second quarter of 1979.

IDIMS SOFTWARE BUG LIST KEEPS USERS INFORMED

In response to requests for up-to-date status on IDIMS software, ESL has initiated a mailing list of current software bugs and enhancement suggestions. The first list has already been distributed. The previous format of the list was primarily intended as a reminder for ESL in-house IDIMS users. A new format has been selected and, as time permits, the old bug list will be translated into this new format. The list will contain only verified problems and will describe them more exactly. The new format will also present ideas for circumventing existing bugs.



IDIMS USER LIBRARY EXPANDS DISTRIBUTION

A new dimension has been added to the IDIMS Contributed Library. ESL will begin using the Library to distribute functions and utilities written at ESL but which have not met the Product's rigid standards. These functions, like all others in the library, are unsupported by ESL. They are to be used at your own risk. With sufficient justification, a particular item in the library can move from the library to the status of a fully supported IDIMS function. This will require that the software be upgraded to our current product standards first.

Conversely, if a supported function is not being used at all, it will be moved from the product to the status of an unsupported member of the library. This will assure that an IDIMS product will be free from an abundance of inactive functions. In this way the system will not become ungainly to use or support, and there will be room for new functions and utilities.

As an example of the latter case, there are three utilities that have received virtually no use for a long time now. They have been deleted from the supported product and will no longer be supported by ESL. Since they are utilities, they will not be purged from your system when you install your new maintenance version. These are:

- CONVERT
- ENTRCNTL
- ENTRSTAT.

Use of library contributions is the responsibility of your site's system manager. Copies are not distributed with IDIMS maintenance releases.

If there are any questions on how to install a library in the IDIMS program, please call Dave West at ESL. For the use of an old function it may be necessary to recompile it from your copy of IDIMS source.

MANUAL REVISIONS

The *IDIMS User's Guide*, TM705, is undergoing revision. Further required changes will accompany any new software versions that are released. Two other manuals, the system manager's manual and its ASAP subsystem supplement, have also been revised. These technical manuals, TM796 *IDIMS II System Manager's Manual* and TM990 *ASAP Subsystem Supplement to the IDIMS II System Manager's Manual* provide the procedures required to manage the HP 3000 IDIMS as well as the ASAP subsystem (21MX-E, ASAP and Dual Memory Interface Controller (DMIC), if used).

NEW DEVELOPMENTS IN IDIMS

DEPT. OF INTERIOR PURCHASES SYSTEM

The newest members of the IDIMS User's Group are experienced appliers of earth resources inventory and management technology. Under recent contract award, IDIMS systems will be installed at the Bureau of Land Management and Bureau of Reclamation facilities at the Denver Federal Center. We hope to introduce these Department of Interior people to you at the next user's group meeting and that they can relate their system start-up activities to you at that time.

REORGANIZATION COMPLETE

The IDIMS Products Department has reorganized in order to better serve existing and future IDIMS system customers. Andy Failla will be the IDIMS product manager and will continue to coordinate and manage the support, maintenance and system installation functions.

Marketing functions are now in Norm Lyon's hands as IDIMS marketing manager. Karen Smith will be acting as administrative assistant for this new dept. Norm can give you information about the many new peripherals for the IDIMS that have been mentioned in this issue.

DEFENSE MAPPING AGENCY REQUIRES SPECIAL GRAPHICS

An IDIMS system will be installed at the Defense Mapping Agency, Aerospace Center in St. Louis, Missouri in March 1979. The recent contract includes specialized graphics software that will be developed prior to installation and an array processor subsystem to support DMA's production processing requirements.

FILM RECORDS SURVEY

Most of you know of ESL's film recorder survey. If not, ask us for our table of specifications comparing 14 different recorder units. Interface to the IDIMS (including an IDIMS function) now exists for the DICOMED D47 unit and is presently under development for the Optronics scanner/recorder line of products. We will be offering the Optronics C4300 and C4500 models as IDIMS peripherals in the near future.

ESL IMPLEMENTS DS3000

ESL has begun work on a project to implement Distributed System 3000 in several IDIMS facilities. The work began in September and is scheduled to be completed in five months.



This LANDSAT image was processed by EROS Data Center for NASA in September 1975. Taken at an altitude of 600 miles, the photograph shows all of the San Francisco Bay Area, as well as part of the Sacramento Valley (upper right) and Monterey (bottom). The swirling clouds off the coast of Monterey are part of a storm front.



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