

30 September 1993

Release of TNTmips™ V4.4

Introduction

Effort on **TNTmips™** since the shipment of **V4.30** has been concentrated on improving the speed and reliability of selected processes. Missing minor features of **MIPS V3.33** processes were restored to **TNTmips** as fast as they were identified by users of **V4.30**. The most important new feature added with **V4.40** is a complete rewrite of the plotting process to make it part of Map and Poster Layout with advanced features. The first draft of all the on-line documentation has been completed. As usual, all significant new features added to **V4.40** are reviewed in detail below.

The primary distribution form of **TNTmips** has been moved to the more reliable and convenient **CD-ROM** at the request of most clients. This has delayed the distribution of **V4.40** by additional 2 weeks while Microlimages learned the hidden details of producing a single **CD-ROM** for use with 9 different types of computer platforms. This **CD-ROM** version of **TNTmips 4.4** is being supplied to every client irrespective of the status of your subscription. Floppy disk media for **PCs** and tape media for workstations are also supplied where so specified in your response to the recent questionnaire.

If you did not order **TNTmips 4.4** you can not install it from this **CD-ROM**. If you wish to do so now please contact Microlimages by FAX or phone to arrange to purchase the required updates. Microlimages will immediately supply you with a 16 digit code number. Entering this code number when running the **TNTmips** installation process will allow you to complete the installation and immediately use **V4.40**. With the release of **V4.50** on **CD-ROM**, any additional support feature (P5, X3, L3, and so on) can be directly ordered via phone or FAX. A similar 16 digit number will be provided by phone or FAX which will allow the immediate installation and use of that feature.

Loading a full install of the **TNTmips 4.4** processes onto your **PC** hard drive will require just less than 60 megabytes. The full installation size will vary for a workstation depending upon the platform type. Installing the on-line illustrations, which are not yet compressed, will require another 80 megabytes on any platform (47 megabytes if compressed by **DOS 6.0**). Thus, as explained in detail below, it may be realistic to many of you who have a **CD-ROM** drive to leave the illustrations on the **CD-ROM** and let the on-line documentation process display them from this disk as needed.

TNTmips 4.5 will be shipped about mid-December on the normal quarterly release schedule. However, it is clear from past experience that this September release of **V4.40** will be that with which you are most familiar when we see you at the 6th Advanced Users' Workshop in January.

TNTview™

TNTview 4.3 (product **MV10**) was shipped about 1 month ago to all those clients who had purchased the **DOS** HyperIndex stand-alone product (product J10) at any previous time. This \$1000 product contains all the visualization capabilities for ***.RVC** files outlined in an earlier Microlimages Memo together with complete ability to access and display any HyperIndex stack created with **TNTmips**.

TNTatlas™

TNTatlas can use only prepared HyperIndex stacks. It has a vastly simpler user interface than **TNTmips** or even **TNTview** as most of the use of a HyperIndex stack is highly interactive clicking and pointing. The only essential initial window activity is the location and selection of the stack to be started if multiple choices are available. MicroImages is now accepting orders for 30 day delivery of units of 5 or more **TNTatlas** products. **TNTatlas** is \$400 per unit on a **PC** (uses a black key) and \$500 per unit for use with any other platform (uses a red key).

TNTsdk™

This software development kit is available for all supported platforms for **V4.4**. It now contains the prototype of an interactive **X/Motif** windows layout tool which will be perfected for release with **V4.5**.

Installation from Tape and Floppies

from floppies for Microsoft Windows 3.1 (MS W3.1).

The 5.25" disk version has 30 disks as follows: 25 containing processes (outline fonts are not being replaced); 4 containing the on-line documentation; and 1 with the installation process and the utilities.

The 3.5" disk version has 25 disks as follows: 21 containing processes (outline fonts are not being replaced); 3 containing the on-line documentation; and 1 with the installation process and the utilities.

Running **INSTALL** from the corresponding floppy upgrades your key to authorize it for **V4.40**. It then decompresses and writes a copy of each process you have licensed from the disks containing **V4.40** into a **TNTmips** directory on your hard drive. You must use the **INSTALL** routine on the installation disk supplied with this release on floppies to decompress the files during installation. Installing this **V4.40** will replace **V4.30** or earlier versions of **TNTmips** if the same hard drive is selected.

from tape for 7 brands of Unix workstation.

If you have requested your Unix variant of **TNTmips 4.4** on 4 mm, 8 mm, or 1/4" **QIC** tape please see the instructions in the Detailed Installation and Optimization Manual (ring notebook) supplied with your original product or shipped with **TNTmips 4.3** and dated 31 June 1993 or later. Alternately, follow the instructions on the page which accompanies your tape. The large capacity 4 mm and 8 mm tapes contain all 7 Unix variant versions. The master installation process automatically checks for the type of Unix and platform you are using and installs that particular version of **TNTmips 4.4**. Larger 250 mb **QIC** tapes (150 mb were previously used) are being used with **V4.40** but still have room for only 5 versions. The specific 5 were selected as the most likely to be needed on **QIC** tape (the remaining 2 versions can be obtained by special request if needed on **QIC** media). MicroImages would have used larger 550 mb **QIC** tape, but it was concluded that the majority of you who have **QIC** tape drives could not handle this larger capacity media.

Installation from CD-ROM

from CD-ROM for Microsoft Windows 3.1 (MS W3.1).

The installation from **CD-ROM** onto your DOS drive is simple. Simply run the **INSTALL** process on the **CD-ROM** and select the installation choices from the menu and all the files, which are not compressed, will be copied into the correct directories. Directories will be created if they are not already available. The time to install **V4.4** from a fast **CD-ROM** drive on a 486 is about 10 minutes. The time to load **V4.4** from a slow **CD-ROM** on a 386 is about 20 minutes. The times to load the illustrations for the on-line documentation are somewhat longer as they take up somewhat more file space than the analysis processes.

from **CD-ROM** for 7 brands of Unix workstations.

(Sun - Solaris 1.x, Sun - Solaris 2.x, SGI - IRIX 4.0.5, DEC - Ultrix version 4.3, IBM - AIX version 3.2, Mac - AU/X version 3.01., Data General - DG/UX version 5.4.1, HP - HP-UX version A.08.07) If you have a red key authorized at level U100 or higher, any of these Unix variant versions can be installed from the **CD-ROM** using the installation script of the appropriate name. For further assistance also see the **README.UNX** file. Running the installation script will untar the appropriate file, create the proper directories, and place the files within them. It is suggested that you first erase all **V4.3** files and directories or rename the directories which contain them in order to insure that no **V4.3** programs remain in the directories selected for the **V4.4** installation.

expanding to 11 Versions on **CD-ROM**.

The current **CD-ROM** contains 9 versions and has about 100 megabytes of free space. This space should accommodate the addition of the 2 new versions of **TNTmips** for Microsoft **NT** for the **DEC** Alpha and Intel processors. These new versions should be available on or before the release of **V4.5** in December (see details below). Expanding the single **CD-ROM** beyond 11 versions may be accomplished by reducing the size of the current processes on the **CD-ROM** and your hard drive. This may be done by using dynamic linking at run time where selected subprocesses are automatically loaded as requested at the time of execution rather than compiled into each separate process. For example, the subprocesses for georeferencing and map projection transformation may add as much as 100 kilobytes to each of 30 **TNTmips** processes. The dynamic linking approach is commonly used in Unix based software but is only now becoming possible via the 32-bit compilers available for PCs.

moving between platforms using the **CD-ROM** (or tape).

The **CD-ROM** you have received contains all currently available versions of **TNTmips 4.4** and the appropriate installation routines. If you have purchased **TNTmips** for a workstation (U100 = red key) you may attach this serial key to any supported workstation, **PC**, or Macintosh and quickly install **TNTmips 4.4** from this **CD-ROM**. Alternately, you can run the **PC** version of **TNTmips** directly off this **CD-ROM** within 1 minute of its insertion into the drive.

If you have purchased **TNTmips** for a Macintosh (U45/M = red key) you may also attach your serial key to a **PC** and quickly install or run **TNTmips 4.4** from this **CD-ROM**.

Should you have the parallel key (D30 to D60 = black key) for a **PC**, your general use of the **CD-ROM** is the same but is restricted to the **PC** platform. These black **PC** keys can be exchanged for a red key for \$100 if you have purchased display product level D45 or greater which is equivalent to the U45/M product level for the Mac version. This new

red key would then allow installation of either the **PC** or Mac versions on these platforms.

Confusing? Just remember that Microlimages' pricing policies are always inclusive, not predatory. If you have paid enough to have a particular display level or special feature level, then Microlimages will try to make its use available to you on all the platforms we support.

It is now quite easy to move and install **TNTmips** from platform to platform via **CD-ROM** if your key is authorized for that level of use. Simply move the key and run the simple install program on the **CD-ROM** for that platform (no tedious disk insertions or time consuming tape access).

Installation to Run Directly from CD-ROM

running directly from **CD-ROM** for **PCs**.

As noted above, a serendipitous new option is now available with the use of the **CD-ROM** which was not anticipated. **TNTmips** processes can actually be effectively run directly off the **CD-ROM** at reasonable speeds. You should at least try this as it's so simple, taking only 15 seconds to install. During the installation on a **PC** you have the choice to install to run directly off the **CD-ROM**. Select this option in lieu of a full install, and it will transfer only about 115 kilobytes of control files to your hard drive (**TNTMIPS.INI**, **TNTMIPS.SAV**, **TNTMIPS.RES**, and others). With your drive access paths set correctly as suggested during the install process, **TNTmips** can then be completely run from the **CD-ROM**.

Remember, for future reference, you may subsequently get correction programs for **V4.4** from Microlimages. If you are running **TNTmips** directly from the **CD-ROM**, these revised programs should be copied to the hard drive from the floppies (or a subsequent intermediate **CD-ROM**) into the appropriate directory which is set up in your path statement so that it will be checked first before the **CD-ROM**. In this fashion, these revised or patched programs will be found and used before searching the **CD-ROM** versions which they replace.

why does it work?

Running from the **CD-ROM** is reasonably fast since all that it uses the **CD-ROM** for is to load each process to memory requested. Head seek time can be 10 to 15 times longer for a new **CD-ROM** relative to a new hard drive. However, reading anything sequentially from a **CD-ROM** is fast since very little head movement or seek time is used and the reading speed depends primarily upon data transfer rates and not head seek time.

Transfer rates on the newest **CD-ROM** drives (at 1 mb-per-second) equal or exceed those of all but the fastest hard drives. Transfer rates on a **PC** can also already be limited for either drive type in such ways as bus transfer speed or some other feature of your system. Furthermore, when installed directly on the hard drive, the files making up **TNTmips** can be fragmented due to the condition of the drive at the time of installation. That is, the individual files may get broken up and scattered around on the hard drive requiring increased head seeking time and associated delays each time the process is loaded from the hard drive. The very nature of the way a **CD-ROM** is permanently produced insures that each file will have no fragmentation so that the effect

of longer seek times is minimized. Remember, your kids are now starting to play Sega and computer games where, at a minimum, all the graphic data resides on the **CD-ROM** and perhaps even the programs.

customizing your running from the CD-ROM.

Certainly the idea of running **TNTmips** directly on a **PC** system from the **CD-ROM** is attractive. Since it takes only 15 seconds to install this version, so you may want to experiment with this new idea on your system and give MicrolImages your feedback. If you wish to experiment with speeding things up from the basic minimal installation, you can copy the **MI/X** server (**XS.EXE** or **XS24.EXE**) and the basic display process (**DISP2D.EXE**) from the **CD-ROM** to your hard drive (remember the **PC V4.4** programs are not compressed). These two processes are used all the time and would only occupy about 3 megabytes of additional hard drive space. They might even be automatically loaded from the **CD-ROM** into a **RAMdrive** at boot-up time if a lot of memory is available to you.

MicrolImages will experiment further with the idea of running **TNTmips** off the **CD-ROM** during this quarter and listen to your ideas. If warranted, some additional options can then be added to install varying levels of **TNTmips** depending upon how you have your system setup. For example, a "4 megabyte install" option might be provided which would install an optimal subset of processes on your hard drive including those window and display processes frequently used when running from a **CD-ROM**.

Installation to use Illustrations from CD-ROM

alas, full running from CD-ROM is not for workstations!

This same approach to running off a **CD-ROM** cannot be used on the workstation versions of **TNTmips 4.4** as all the process files are in a compressed tar format to save space on the **CD-ROM**. However, the illustrations for the on-line documentation are not compressed and can be used directly off the **CD-ROM** for any platform.

standardized illustrations and sample data.

TNTmips 4.4 processes must be compiled for each platform! But, all versions are being distributed and can be read from the **CD-ROM** if written in the standard 9660 recording format. However, you will find that the illustrations and the standard sample data sets only occur once on the **V4.4 CD-ROM**. They are simply data files in ***.RVC** format which can be directly used by any version of **TNTmips** for any platform. Other data files can also be easily read from the standard 9660 file format used on the **CD-ROM**. Thus a single ***.RVC** file or HyperIndex® stack can be produced on **CD-ROM** for use on any platform running **TNTmips**, **TNTview**, or **TNTatlas**. Those using the **TNTsdk** (Software Development Kit) may wish to keep this in mind. This approach should also be of interest to those various MicrolImages customers who already have or will shortly purchase a **CD-R** drive (write-once **CD-ROM** makers) to distribute data sets of your own design. You can create materials once on **CD-ROM** for use on any platform supported by MicrolImages products. While there will be some further details to work out, this approach appears to be rather unique in the computer industry.

Price Increase for Upgrades

upgrade cost increases go into effect.

As announced 6 weeks ago, effective with this release of **TNTmips 4.4**, the cost of an annual subscription for a **PC** or Mac via **CD-ROM** will continue to be \$800 while the price for continuing to receive floppies will be \$1000 for any new subscriptions placed from this time.

On-Line Documentation

IMPORTANT. The on-line illustrations for **TNTmips** have not yet been compressed and will take up a large amount of space on your hard drive (47 megabytes on your double spaced drive via DOS 6.0). If you are using a **CD-ROM** with **TNTmips** on any platform, then you may leave these illustrations on the **CD-ROM**. **TNTmips** will access the illustrations directly from the **CD-ROM** as needed. The access speed for this will not differ much as the illustrations are read sequentially with transfer rates similar to those of a hard drive.

A total of 1161 pages of **TNTmips** documentation are included in the on-line form with **V4.40**. Several sections were completed after the master disks were sent into the reproduction process. These 114 additional pages are included in supplemental, printed hardcopy form. The documentation of **TNTmips 4.4** is now considered complete in draft form. The on-line documentation printing capability is available but will not yet print the on-line illustrations. All 7 of the Microlimages technical writing staff spent almost all of the 3 weeks prior to the shipment of **V4.40** in testing the processes for general correct operation and for concurrence of the on-line documentation.

Most of the staff of Microlimages Press will spend next quarter expanding this version of the documentation and illustrating it further. It is anticipated that the documentation of **TNTmips** will therefore grow to between 1400 and 1600 pages by the release of **V4.50** in mid December. At that time it will be considered as complete and will then be modified as new features are added or existing features are altered and improved.

As in the past, a master copy of the **V4.40** on-line documentation, including illustrations, has been deposited at Kinko's Copy Center in Lincoln for your direct ordering. It does not include the temporary supplemental printed sections which you are directly receiving with **V4.40**. Please be careful to specify the exact version number of the printed copy of the documentation you wish to order from Kinko's as they have both **V3.32** (no changes for **V3.33**) and **V4.40** on hand. Please contact George Hiatt; Kinko's Copy Center; 1201 "Q" Street; Lincoln, NE 68508 at voice (402)475-2679 or FAX (402)475-2523 for this service. The printed copy of the 1320 pages for **MIPS V3.32** (specify single or double sided) is approximately \$80 plus the charge for shipping by the method specified. The printed copy of the 1161 pages for **TNTmips 4.4** (specify single or double sided) is also approximately \$80 plus the charge for shipping by the method you specify. A credit card is the best way to pay Kinko's for both the copying and shipping.

Microlimages X Server (MI/X)

Windows 3.1 for the PC.

No changes have been made in the **MI/X** server for Microsoft Windows 3.1 this quarter as no errors have been identified which were not traced to the **MS W3.1** driver of the board or some other related system setup problem. Correspondingly, all effort in this area has been concentrated upon completion of **MI/X** for **NT**.

The concept of network sockets has now been supported by Microsoft for **MS W3.1** by using a **DLL** released with their latest Software Development Kit. MicrolImages has just expended considerable effort to adapt this network interface **API** (Application Programming Interface) concept into **MI/X** for the **NT** version. This may allow MicrolImages to retrofit this concept to improve the **MI/X** for **MS W3.1** so that it also provides full **X** client and server support. In other words the **MI/X** supplied with **TNTmips** for the **PC** using **MS W3.1** would, as it will in the **NT** version, allow you to run **TNTmips** locally on the **PC** and to run as an **X** terminal with any **X** software or **TNTmips** processes executing on a workstation. Currently **MI/X** supports use of **TNTmips** only as a client running on the **PC**.

Windows **NT** for the Intel based and **DEC** Alpha **PCs**.

Microsoft Windows **NT V3.1** has now been released, and the final version and developers kit has been received. MicrolImages now has **TNTmips** working with **MI/X** functioning inside **NT** on both processors via a network using sockets. This development version of **MI/X** allows you to run **NT** on a **PC**, start up **MI/X** within it, and execute **TNTmips** or any other non-MicrolImages software using **X** on a remote workstation and operate that software as though you had an **X** terminal. MicrolImages is now recompiling **TNTmips** processes for both the Alpha and Intel based machines and will work out any minor problems with running **TNTmips** locally in a similar fashion to what you are using for **MS W3.1**.

Please note that MicrolImages still uses Watcom C 9.0 for compiling the **MS W3.1** version of **TNTmips** and **MI/X**. However, the Intel and Alpha based versions are currently being built with Microsoft's 32-bit C released with the **NT** software development kit. Recently MicrolImages tried building the **MI/X** process for **NT** using the Watcom C 9.5 and found pesky compiler errors. MicrolImages will spend more time later comparing these two 32-bit C compilers.

Unfortunately, we have found that our supplier of hardware protection keys can not provide support for the current black keys via a parallel port for **MS NT**. Thus when **TNTmips** is available for **NT** on the Intel based **PC** you will need to swap out your existing black key for a new tan key which will need to be attached to a serial port. This tan key will work with **MS NT**, **MS W3.1**, and Mac versions of **TNTmips**.

The **DEC** Alpha **AXP** based version of **TNTmips** will cost somewhat more than the equivalently priced versions for **MS NT** and **MS W3.1** for Intel 386, 486, or 586 PC platforms. Thus, for this product MicrolImages will use the more expensive and versatile red serial keys that are used with the current workstation versions. Thus clients with a red serial key and a U/100 license will be able to immediately try **TNTmips** for the **DEC** Alpha **AXP** running **MS NT**.

DEC Alpha **PC** users will not be able to use Unix until **DEC** releases the Unix variant called **OSF/1** for these Alpha based **PC** products and MicrolImages releases even another version of **TNTmips** for that Unix variant. However, a **TNTmips** for **OSF/1** will work on the Alpha **PC** platform as well as the larger **DEC** workstations based upon the Alpha processor and for which **OSF/1** is already available.

POSSIBLE PUBLIC DOMAIN RELEASE OF MI/X. **MI/X** for **MS NT** and possibly for a future version for **MS W3.1** will provide full **X** workstation client/server operation just as with current commercial products costing \$500 per **PC** (**XVision**, **Desqview/X**, **XView**,

and so on). Presently **MI/X** checks the hardware key present on the **PC**. Thus to use **MI/X** for remote execution of **TNTmips** (and other Unix software) on a workstation requires a key attached to the **PC**. It also requires a key be attached directly to the workstation, **DEC** alpha, or remote **PC** which would execute the **TNTmips** processes. This is not a very practical approach to using **TNTmips** remotely.

Furthermore, Microlimages is not interested in promoting the sale of other manufacturers' **X** terminal software packages. They are expensive, complicated to set up, and each one seems to have little, but irritating errors which are acknowledged when reported but never fixed. **MI/X** will certainly have similar errors, but Microlimages can then fix these. As a result of these circumstances, where Microlimages can not control its own destiny, consideration is being given to removing the key protection from **MI/X** for the **MS NT** (and **MS W3.1** if modified for full network support). This would place **MI/X** in the public domain as an unprotected, giveaway **X** terminal package. Additional consideration is even being given to going one step further and placing the source code for **MI/X** in the public domain by posting it up on one of the **X** or Motif related Internet bulletin boards.

It might be possible for Microlimages to package and sell **MI/X** as a product but this is not in line with the plan to continue a very clearly defined focus to make **TNTmips** into the most advanced product of its type available worldwide. Such a low cost, but high volume product, might become a big distraction from the single-minded Microlimages objective.

What is the value of a public domain **MI/X**? It seems that a public domain **MI/X** concept would spread and would also further both your interests and Microlimages'. For example, it would allow you more flexibility in the network use of **TNTmips** which serves Microlimages' interests. It also would help market more multi-user versions of **TNTmips** and make those aging 386 machines around the world into useful **X** terminals. It also sends a silver bullet at Bill Gates (doubt he'll ever notice it however) who wants nothing done to further the use of Unix in the face of **MS NT**. He certainly could have made **NT** run **X**/Motif software a lot more easily and sooner than Microlimages. However, maybe releasing this source code will contribute to the need for moving **X**/Motif and **MS V3.1** together as a standard, common user interface. At this point, Microlimages would like your input on this topic as a decision is pending here. Should this be done? Why? Are there pitfalls and other considerations being overlooked? Maybe we could get Gates to pay us not to do it?

Display Boards

The only new specific information on the selection of appropriate display boards occurs in the article: Steve Gibson; 1993; [Life in the Fast Lane, Infoworld determines just how effective 11 VESA Local Bus cards are at improving video performance.](#) INFOWORLD, 28 June 1993; page 118 to 132.

Optimizing MS W 3.1

Just prior to the shipment of **V4.40** a client site has reported that they have been able to reduce the loading times for **TNTmips** by a factor of 2 relative to those shown on the bright orange chart [Getting Up to Speed](#) included with **V4.40**. These adjustments also appear to have increased the display rates by a factor of 2 times. Microlimages has not

yet had time to try and verify these results achieved with a 486/66 machine with 22 megabytes of real memory. However the general methods used were: 1) remove double space; 2) defragment the hard drive and reinstall **TNTmips** immediately; and 3) install an 8 megabyte disk cache using the **NCACHE.EXE** in Norton Utilities **V7.0**. The times reported were 7 seconds to start **TNTmips** and 7 seconds to start Display 2D (starting **TNTmips** on a Sun SPARCstation 2 would take 5 seconds). MicrolImages will keep you informed of these developments.

One point that has become clear is that software which is large with large modules should not be fragmented when used. For example, the **TNTmips** display process is a large module which is loaded over and over, and loading in this fashion with many head seek operations is slower. Therefore, it is advisable to defragment your hard drive immediately before installing **TNTmips** (in other words get all free drive space together into 1 large block). Use **SPEEDISK.EXE** from **MS W3.1** or Norton Utilities **7.0** for this purpose.

Use on a 586/60

Several client sites have installed **TNTmips 4.3** on 586 microcomputers operating at 60 megahertz. **V4.3** was not recompiled but operates without known difficulties. The test times they have provided us for starting Microsoft Windows was 10 seconds; **TNTmips** was 7 seconds; and Display 2D was 6 seconds. These times are recorded upon the new bright orange chart Getting Up to Speed. It is possible that the times reported for the 586 would be reduced to as much as 1/2 if the optimizations noted above were applied.

Use on Workstation Clones

MicrolImages recently had occasion to install **TNTmips 4.4** for Solaris 2.x on a Tatung SPARCstation clone of a Sun SPARCstation 10. The installation was immediate and the **V4.40** ran without problem or modification. Tatung is the largest selling clone of the SPARCstations and is binary compatible with them. As a result MicrolImages has acquired, and is evaluating for possible resale, a Tatung clone of the Sun SPARCstation **LX** SPARCstation. Any workstation clone which is 100% binary compatible with the 7 workstation lines supported by **TNTmips** can be expected to function satisfactorily. Tatung's SPARCstation clones can be purchased for about 25% less than the price of a Sun workstation. MicrolImages has also purchased a Tatung **X** terminal to test and it operates excellently with **V4.40**.

Sun Solaris Error

There is an error in Solaris 1.x in Open Windows version 3 when used with a Motif 1.2 program. If your not sure if you are using Open Windows version 3 check this on the Open Windows startup screen. **TNTmips 4.3** used Motif 1.1 and is not affected! **TNTmips 4.4** uses Motif 1.2 and will be affected! If your version of Open Windows has this problem you will find that **TNTmips 4.4** windows will lock up within the first few operations and/or you will be dropped out of open windows. If your windows lock the <ESC> key will release the menu so that you can quit **TNTmips**.

As a convenience, the **TNTmips 4.4 CD-ROM** contain the patches needed to repair Open Windows 3. These will be found in the "sunpatch" directory on the **CD-ROM**.

There are **README** files in the sunpatch.tar which contain the instructions from Sun on how to apply these patches.

If you are using tape to install, the installation procedure will extract the same patch and **README** files to your hard drive. You will then have to apply them as instructed by those **README** files.

If you have any further difficulties on this Sun error please contact MicrolImages' technical support.

Windows for Workgroups

MicrolImages has acquired and installed the current version of Windows for Workgroups (**WfW**) in both client and server modes. No special difficulties were experienced in the use of **TNTmips 4.3 or 4.4** other than those which would also occur with its use with Microsoft Windows **3.1**. This also corresponds to results reported by several client sites.

Difficulties were experienced unless **WfW** was set up perfectly. **TNTmips** is a complex user of **MS W3.1** in ways which other software never use. Thus **TNTmips** has identified errors in **WfW** where non-standard or improperly installed hardware is used which creates subtle conflicts (especially with varying brands of network cards).

WfW is very sensitive to installation issues. The network board has to be installed so as not to conflict with anything. Just because **WfW** works with some spreadsheet or word processor does not mean it is set up properly or that conflicts will not occur. These conflicts will more likely occur with software such as **TNTmips** which uses all the system and network resources such as the system memory, serial, parallel, **SCSI**, and many other devices.

Some useful pointers in setting up **WfW** for use with **TNTmips** are as follows: 1) Be sure the **ROM** space on the card is mapped out of the emm386 or qemm space if used. 2) There should not be any conflicts with the systems **I/O** ports. 3) It may be necessary to tell **MS W3.1** to exclude the **ROM** space on the board.

Symptoms of a poor installation include the following. 1) You won't be able to network. 2) Network communication will be in error. Trying to execute a program from another computer will randomly fail as the data being transferred is corrupted. 3) **TNTmips** crashes when many clients are using the **WfW** server, if the machine is too slow, or if the setting **CPU** usage is configured for fastest network response (hence slowest local response at server). Please ask MicrolImages Technical Support for help on these matters.

Networks in General

MicrolImages now has 9 workstation brands, 16 of 486s, 7 of 386s, 2 Macs, a **DEC** Alpha **AXP**, 1 **X** terminal, and a variety of printers and other peripheral devices operating via Ethernet and **NFS** with an attached Appletalk adjunct network with 17 additional Macs.

Using software and procedures developed by MicrolImages, overnight "builds" of all **TNTmips** software modified that day are automatically performed on each platform. Information on any compiling errors and warnings are E-mailed automatically as

compiles are completed to each originating software engineer before morning. The software engineer then determines why their code does not compile correctly on a particular platform. In this fashion, each software engineer learns quickly to avoid the idiosyncrasies of the manufacture's mostly standard 32-bit compilers and their definitely non-standard Unix variants. As a result MicrolImages continues to gain experience on how to make it all work together with **TNTmips**.

Temporary Limitation to RVC Project File Access

WARNING, do not attempt to use the same RVC Project File in two or more **TNTmips** processes at the same time unless the file is set to read only. Simultaneously executing two or more **TNTmips** processes in a multiprocessing sense which attempt to write to the same **RVC** file may result in unrecoverable loss of data in the **RVC** Project File. This restriction will be removed in a future version of **TNTmips**.

New Features

* Features preceded with this symbol "*" were minor features which were in **MIPS 3.33** and were omitted from **V4.30** and have now been improved and added with **V4.40**.

Display 2D.

The concept of defining null or "no value" cells in a raster has been gradually introduced with **TNTmips** and released as a new feature in various processes. Display will now treat null value cells as transparent if this new option is selected. This important, useful new feature will now allow the overlay of raster layers in the display process. Also remember that this feature combines rasters transparently at display time regardless of their cell size, extent, map projection, etc.

A "mask" binary raster object can now be selected together with its corresponding data raster object. This will make the masked data cells "transparent" allowing complex overlays of the data raster object to be created. A mask object can be created in processes such as **SML**, Feature Mapping, Edit Raster, and others. Values of "1" in the mask raster object will cause the corresponding cells in the associated raster object to be displayed while values of "0" will be treated as null values and become transparent.

The user can specify whether to perform "local" or "global" color optimization where appropriate for raster objects. Local color optimization may be faster for viewing small portions of large rasters and will generally produce better results. Global optimization is faster if the entire raster is to be displayed and subsequently zoomed/panned.

The Layer / Quick-Add / Raster (single) option now allows multiple layers to be added at the same time.

The currently selected layer will be used if possible to determine the default projection/coordinate system for map coordinate display.

The user can change the "layout mode" from "display" to "map and poster".

Examine / Object Extents now displays zone, datum, ellipsoid and actual projection used for the reference coordinate system.

***RGB** raster display allows "skipping" of one or two colors.

*Measurement tools now display the extents and center in object coordinates for all layers in the group covered by the current tool.

*Raster histogram uses a crosshair to display position, value, cumulative left/right distribution under the histogram.

*Correlation histogram now displays X/Y position and counts.

Snapshot Saves.

Most object display windows now have a View / Snapshot option to save a snapshot of the window into a raster object.

Graphical Editing Tool Changes.

The following changes have been made in all processes where graphic editing tools are used.

The polygon editing tool, where appropriate, now always graphically illustrates how a polygon will be closed. This is shown continuously by a dashed line from the start to end points when a polygon is being created or altered. This makes it much clearer that a closed polygon is being created when defining an area for measurement, creating a polygon when editing a vector or CAD object, and others.

The undo feature in these tools now removes all changes in the selected line or polygon elements. If this undo is not yet available where it seems logical in a particular process using the graphical editing tools please let Microlmages know.

The "Close Line" feature adds the first point of the line to the end, thereby forming a polygon. This is not used in the polygon editing mode.

The graphical editing tool dialog no longer undraws and redraws after pressing the right mouse button or the "Save" button.

A circle can now be resized via the arrow keys with the shift key pressed.

The graphical editing tools can be moved via the arrow keys and the Home, End, PgUp, and PgDn keys.

File Selection.

*During file selection the user can now press a letter key to jump to the first file starting with that letter. This permits more rapid selection of the files.

*During file selection, when moving from the "object" to the "file" level, the file just moved into for that object will be reselected in the list.

Project File Maintenance.

The georeference object parameters can now be edited. This feature should be used with care, but allows the correction of values which were erroneously specified previously by you or in the imported objects, such as the **UTM** zone.

The content of the window which is displayed by the "Info" button can now be saved to a ***.TXT** file.

*Selected object attributes can be edited. Raster cell sizes and "null" values can be specified. Vector/CAD scale values can be set.

*The delete operation is now allowed on project files.

General File Maintenance.

*The "Copy", "Rename", and "Delete" operations are now supported.

Batch Jobs.

Under **MIPS V3.33** batch jobs were set up for individual processes and there was an option under that process selection to run batch jobs for that process. This approach did not permit multiple types of batch jobs to be queued at the same time.

In **TNTmips**, selected processes will have a "File / Batch ..." option or a "Batch ..." push-button, depending on the process. The behavior for such processes when the "Batch ..." option is selected is the same as if the "Run ..." option is selected except that the parameters will be saved to a "batch setup" *.**TBF** file which you name.

The "Support / Run Batch Jobs ..." option allows the selection of multiple *.**TBF** files and executes them all in the order they were selected. The processes specified by *.**TBF** do not all have to be the same type of process.

Georeferencing.

*An "implied" georeference object can be created for vector and **CAD** objects.

*The computed cell size, orientation, and shear is displayed based on the active control points.

*The projection coordinate systems can now be saved and will subsequently appear in the "System..." selection list.

On-Line Documentation.

The on-line documentation process will now allow the creation of **ASCII** files for any or all of the documentation text volumes. During the setup to create the files you can specify if you wish these files to retain or suppress the hidden indexing codes which the MicrolImages documentation building process uses to embed index points and formatting into the on-line documentation for use when it is on-line.

Several clients have requested this feature so that they can get at the contents of the on-line documentation to reorganize, add to, print, translate, and otherwise change sections. You can use this new feature to create **ASCII** files of the documentation to load in your preferred word processor. In a subsequent **TNTmips** release, a translation table feature can be provided so that the simple formatting used (bold, underline, etc.) can be translated through the table to corresponding codes producing these special text effects in your word processor file. The ability to suppress all the special documentation indexing from the **ASCII** file will also be added.

Some clients are busy translating the **TNTmips** documentation into Russian, Polish, German, and other languages as fast as it is created and released. Using this new feature they can move the most current on-line documentation volumes into **ASCII** files with all their encoding and load them into their non-English word processors for translation. In this circumstance they wish to retain all original hidden encoding. The actual text can then be added to, altered, translated to another language, and otherwise changed. The program which MicrolImages uses to build and link up the on-line documentation can then be used to rebuild and link the translated version of the documentation. MicrolImages Application Note entitled Internationalization and Localization contains information on how you can rebuild the on-line documentation.

Previously, special current documentation files had to be obtained from MicrolImages for translating as the on-line version of the documentation, as distributed, is compressed and altered in a number of ways for efficient on-line use. With this new feature the exact same input files can be recreated from the on-line documentation for the currently

released version from the **CD-ROM**. These files will be exactly the same as MicroImages uses to build and link this version of the on-line documentation. It would even be possible for any user to add notes to documentation subsections as they are used. However, if this "note annotation feature" is useful MicroImages will add simpler procedure(s) which could be more directly used.

Editing Rasters.

The loading time of an existing or new raster to be edited has been markedly increased by a factor of 30 or more.

Tool positions are now retained as defaults when switching between tools.

Brush cursors now have the same white outline as other cursors so they show up over dark background areas.

*The process now uses a revised color map/palette editor and color spectrum and spreads can be performed.

Filtering Rasters.

All data types in raster objects, 1 to 128 bits per pixel, can now be filtered, not just 8-bit integer data. The output raster object will be of the same data type as the input.

Multiple input objects can now be selected for filtering to create multiple output rasters.

Importing and Exporting Rasters.

The format used by the large format **LVT** (Kodak subsidiary) film recorder can now be imported and exported.

The Laser-Scan **LSLI** formats can be imported. This format is produced by the software which controls the large format Scan 1000 sold by Laser Scan U.S.A.

The **DSEE** (Dianippon **S**creen **E**ngineering **E**urope) format can also be imported. This is the format created by the software which Dianippon provides directly for the same large Scan 1000 color scanner as above.

The import and export of Canadian line data in **Digital Map Data record Format (DMDF)** into **CAD** or vector objects has been adjusted to accommodate variants encountered in client's data sets.

Simple array, **ERDAS**, **TARGA**, and **GGR** (see section below) raster files can now be externally linked to a ***.RVC** project file. Using this option via the appropriate raster import process will simply link the file(s) to a project file and they will appear to be a normal part of the project file to every **TNTmips** process while remaining in their original format for use in your other software. This will also reduce the overall size of a project file by retaining several smaller files which may even be on other drives somewhere else in the network. A single project file may also link to files in more than one type of format.

Multiple input file selection has been added to the processes which import simple array, **TIFF**, **TARGA**, **GIF**, **PCX**, **LVT**, and **GGR**. You can also elect a ***.TXT** file that contains a list of the files to be imported and their extended paths. Such a ***.TXT** file can be generated by **TNTmips** or other software and control large scale mass imports of raster objects (for example, a swarm of video images).

All the above formats now prompt for the output raster object location after clicking upon the import button.

The above formats and several other import and export formats now leave the main window up while performing the import/export and then return to that window when done for possible reuse. Older formats closed the window and required you to select the format again.

The previous enhancements will gradually be added to all applicable import/export processes, especially if specifically requested.

Generic Georeference Raster (**GGR**).

MicroImages has now defined and documented a public domain raster file format called **GGR**. This format can be imported, exported, or linked to a ***.RVC** project file. Detailed information on the **GGR** format and its characteristics are contained in Appendix 5 in the on-line documentation. In summary, **GGR** defines a generic raster format for data which is 1- to 64-bits per pixel, contains georeference and map projection information, and is built to be extensible for new descriptive fields rare encountered, such as for use in georeferencing each line separately for line scan, sonar, Lidar, or **SAR** type devices.

If you are writing your own programs elsewhere outside of **TNTmips**, you may want to consider placing your raster data into this format, especially if you want to link **TNTmips** to a lot of your files. For example, you may be generating or saving a lot of images from a video camera, automatically scanning 35 mm photos, and so on. When your software creates each **GGR** file it can automatically name it and write the drive location, path, and file name into a separate ***.TXT** file. This file can then be used to immediately link or import into ***.RVC** all the **GGR** files generated in your process, each of which might be automatically georeferenced by your collection system.

The automatic linking/import feature has been included in the import process for the **GGR** format as outlined above. Mosaic, as also described below, has also been modified in **V4.40** to use the same ***.TXT** file to automatically mosaic your images. When this new "bulk" linking feature is added to HyperIndex and other **TNTmips** processes you can automatically deal with the selection and processing of your images, which if linked, are also available to your software for analysis.

Why define another format for this purpose? MicroImages had requests for an expanded external format defining more of the ancillary information used by **TNTmips**, especially georeferencing and wider raster data types. After careful review of the many raster formats already well known, none were found to be complete or even extensible. For example, the many public domain **TIFF** formats handle many useful data types but allow for little in the way of georeferencing or other flexibility. Conversely, most of the other raster formats will handle only 1 or 2 data types (for example 8 bit and 24 bit). Thus it was decided to define and maintain support of this new flexible format for your use. If you need features added to the format for your special use, please request them.

Perhaps someday MicroImages will define a similar linking concept for **CAD** and vector data types. However, a similar generic file format is already defined for creating vectors by using the **MOSS** format which is simple to create and well documented. The ***.DXF** format also functions well for creating generic **CAD** data sets which you wish to create with your software. It is widely used by many software packages and is documented in the Auto**CAD** Release 11 Reference Manual; 7 August 1990 in Appendix C; entitled Drawing Interchange and File Formats; pages 527-558. However, at present it is not

readily possible to define the concept of linking to these line oriented formats. Any editing or other changes to a linked *.DXF or **MOSS** file would require considerable rearrangement (defragmentation or expansion) and thus abrogate the linking.

Copying Rasters.

This formerly separate process has been merged into the raster analysis process, which saves about 3 mb of disk space. Its access and use is unchanged.

Mosaicking.

A set of raster objects can now be selected automatically for mosaicking. Use any text editor, create a file where each raster object to be mosaicked is named and located. The full drive:path/filename and raster object name are entered as a line in this *.TXT file for every raster object to be mosaicked. Selection of the *.TXT file in the mosaic process will now automatically select these raster objects for mosaicking. If you are creating rasters with an outside program that has the ability to automatically generate a text file with file names, then mosaic can use this text file as input.

The mosaic process is now 3 times faster or greater relative to **V4.3** depending upon the characteristic of the raster objects involved. Under some circumstances, depending upon the size and number of raster objects, this time improvement can be much greater.

Slope, Aspect, and Shading.

This process has been modified so that it does not automatically create all three of these new raster objects. Any combination of the 3 raster objects can now be specified for generation. The process can also now overwrite existing rasters if this is specified.

Importing and Exporting CAD/Vectors.

The import/export for the MapInfo format for **MS W3.1** into a **CAD** object was almost finished at the time of release of **V4.40**. If you need it before the shipment of **V4.50** ask MicroImages' technical support for a special shipment of it.

*An ArcINFO coverage file can now be imported into a vector object with a capability equivalent to that in **MIPS V3.33**.

CAD to Vector Object Conversion.

Conversion of a **CAD** object will now generate a database table consisting of vector label strings. The polygons that the labels are in are attached to the records in the new table.

Text Editor.

A search for a text string can be made.

A search and replace of a text string can be performed.

Pen Plotting. **WITH MAJOR CHANGES**

Pen plotting has been completely rewritten for this release. It contains major new features and capabilities described in detail in the on-line documentation. It is no longer a separate process and is now integrated into map and poster layout process within the display process with numerous new features.

You can now layout and plot, (via pen support product L3) anything you could previously select and design in a layout for a printer including text (using bird fonts), vector objects, CAD objects, text objects, line styles, and so on (everything except rasters which will simply be ignored). Scale bars and map grids are also supported.

Much more elaborate and complex plots can now be prepared with pen plotters and much more so with ink jet and electrostatic plotters.

Color Merge Process.

A color merge process is now available which will merge a stack of 2 or more single raster objects which have the same dimensions. The process treats null values as transparent, allowing the values in the lower layers to show through in the final raster object.

Surface Fitting.

The polygon fitting methods have now been made available as a part of the surface fitting process which uses the triangulation method. Thus the surface fit by this method to a swarm of data points in a vector object can be confined to the polygon area defined. This polygon boundary also defines the boundary for the surface fitting process.

Feature Mapping.

The process now makes use of any available georeference or cell size information to determine feature areas. The georeference takes precedence over any cell size specified by the raster.

*The "cell aspect ratio" can be specified when performing cell size calibration.

*A line can be drawn instead of filling a polygon in the "Draw Prototypes", "Draw Features", and "Protect Areas" tools.

Polygon Fitting.

A new home range analysis process has been added based upon a tessellation method and might be described as finding the individual polygonal areas of influence of a swarm of points. The process grows out circles at uniform rates around each point defined by a database query. When the circles from a pair of points touch, a tangent through that point defines the face of a polygon dividing those 2 points. Taken to completion this process describes a polygon area of influence around each point except those around the edge where growth outward of the circle is never stopped. You may also limit by area the polygons which are written out to the CAD object. For example, only those points which are close together and have a small area will have their polygons saved in the CAD file.

Every point on the edge of a polygon is equidistant from a specific pair of points. In effect this process assigns each point the area it can influence by a process taken to completion in all directions until stopped by the same process initiated elsewhere. These polygons might define the home range of animals which live in burrows and eat the surrounding grass, the growth of random inoculations of a petri dish on a nutrient base, or the spread of an infectious disease.

Detailed information on this new process can be found in:

Wray, S., Cresswell, W.J., and Rogers, D. 1992. Dirichlet tessellation: a new, non-parametric approach to home range analysis. In Wildlife Telemetry: Remote Monitoring and Tracking of Animals. edited by Imants G. Priede and Susan M. Swift. Ellis Horwood, New York. pp. 247-255.

Editing CAD and Vector Objects.

Other display layers (e.g. reference objects) under the vector / **CAD** object being edited can now be removed or added.

Trend Removal.

A separate raster trend removal process has been created. A trend restoration is also available. Thus, the trend to be restored or artificially added can be designed and defined by providing the coefficients of the trend polynomial.

Classification.

The covariance matrices can now be saved.

A dendrogram can be displayed for the output classification result.

X-Y Digitizing.

All digitizer processes are now supported on Unix based platforms.

Orthoimages from Single Images (Restitution).

When this process is used, a matching **DEM** raster object can now be optionally created matching the new cell size and map projection to that requested for the orthoimage. Thus the orthoimage and **DEM** raster objects which result can be immediately displayed in the **3D** display process.

All Orthoimage Creation Processes.

All these processes will now allow the selection and subsequent automatic processing of multiple raster input objects. Thus a color orthoimage can be created by selecting all three **RGB** raster objects for processing.

A preprocessing feature has been added to allow polygons of known elevations to be drawn on one image of the stereo pair. Closed shape areas should be predefined in this fashion if they represent areas of uniform tone and fixed elevation (such as water) or inclined slopes (such as agricultural fields). These areas of uniform tone will produce poor elevation results in the **DEM** as their cells do not autocorrelate well between the pair of images. For flat polygon areas, such as water, a single elevation value can be interactively entered as part of this process for a cell in each polygon. For inclined polygon areas, a number of elevation values can be entered (usually for cells near the inside edge). If multiple points are entered in a single polygon, they will be used to determine an inclined elevation plane for that polygon by least squares. The **DEM** raster computation process will determine each cell's elevation in these polygons from the value(s) defined by this new graphical preprocessing step (thus fixing elevations for water bodies and determining them from the inclined planes for sloped areas). Note, the shape of the outline of a lake or other feature whose elevation has been predefined in this fashion will still be altered as it moves through the **DEM** and orthoimage creation process.

SML.

SML processes have now been improved so that they are now 8 to 16 times faster in execution than in **V4.30** and are generally faster than those in **MIPS V3.33**.

*The function SelectOutputRaster in **MIPS V3.33** had optional parameters for number of lines, number of columns, and data type. If omitted, the user was prompted for them when the **SML** script was run. In **TNTmips 4.3** and before, these parameters were mandatory. As of **V4.40**, they are optional again, and if omitted, the user will be prompted for them when the script is run.

Importing TrueType™ Fonts into MicrolImages Fonts.

The first pure Microsoft Windows utility has been created to assist with moving TrueType fonts into the MicrolImages bird font outline format. This utility duplicates the import procedure which is already added to the Outline Font Editor in **V4.30**. This unprotected utility **TTFTOTNT.EXE** can be run on any computer using **MS W3.1**. It will enable you to convert any TrueType font into an outline ***.OF** bird font for use in **TNTmips**. This public domain utility can be used to capture fonts on **MS W3.1** platforms for immediate use on any type of platform, especially your Mac or Unix workstations. After creating the ***.OF** font file with this utility, simply move it to the other platform as a binary data file and use it in **TNTmips**.

TNTsdk™ (Software Development Kit)

MicrolImages Interface Builder. Prototype Process

MicrolImages releases for the first time with **TNTsdk 4.4**, a **MicrolImages Interface Builder** and **Motif Interface Builder (MI/B)**. The **MI/B** is an interactive Motif window design tool and will be expanded further next quarter. **V4.40** supports the design of **X/Motif** Windows for fast prototyping. It provides an interactive design approach with all the standard tool kit of **OSF/Motif** (except for menus). In this first version you can quickly test the look and feel of a user interface design before writing any code.

Next the **MI/B** will be extended to actually generate usable C code on request. Processes you are developing with the **TNTsdk** can then include this 32-bit interface code for use on any platform supported by MicrolImages.

Good public domain interactive design tools for Motif have not been found. Commercial interactive Motif design tool kits have several significant limitations such as high price per user (for example, \$5000 per chair or user); limited to a few platforms; not available for use with **MS W3.1**, limited to a few C compilers; too expensive for our **TNTsdk** users; and others. MicrolImages thus initiated development of the **MI/B** for our internal development as well as the use of our clients, especially those of you using **TNTsdk** to extend **TNTmips**.

New Image Printers/Plotters Supported

HP Deskjet 1200C (model C1676A) [without PostScript] and

HP Deskjet 1200C/PS (model C1686A) [with PostScript].

This 300 dpi color ink jet printer is faster than any other comparable color ink jet. It is capable of printing quality images on up to 8.5" by 14" plain paper, slightly better on the special HP clay coated papers, and very high quality on the HP expensive Glossy paper (looks like plastic). The 1200 printers have a parallel interface. Their base memory is 2 mb which is all that is needed when used as a printer with MicrolImages Map and Poster Layout printing process. For printing it requires **TNTmips** with a **P5** printer support level.

This printer also includes as standard the **HP-GL/2** support so that it can be used as a pen plotter via **TNTmips** using the **L3** plotter support level. This dual use (printer and pen plotter) is strongly recommended with the new advanced plotter features released in **V4.40** which makes it possible to design and then plot complex maps from **CAD** and vector objects (via the **HP-GL/2** and the built-in raster engine). For example, a map looking like a state highway map with complex line types can quickly be designed and plotted from Tiger line data in a CAD object on this printer at very low cost and fast

plotting. **TNTmips** now supports solid fills and other similar features for plotting to this and other devices which use **HP-GL/2** protocol. However, the size and the complexity of a pen plot via **HP-GL/2** is limited by the amount of printer memory available, especially when solid polygon fills are being made. Memory can be expanded up to 16 megabytes for this purpose.

HP DesignJet 650C (models C2858A [24"] and C2859A [36"])

Pen plotting on this printer via support feature **L3** and **HP-GL/2** should be seriously considered with the advent of the advanced features now included in Map and Poster Layout. Pen plotting as well as printing can both access and use the single parallel port on the printer. A large format "highway type" map for a county of medium complexity Tiger data can be plotted in 7 to 10 minutes with text labels. Again, as with the 1200C, the size and complexity of the plotted vector or **CAD** objects, text, scale bars, and other data is limited by the amount of memory available, especially where solid polygon fills are being made.

The inks used with the **HP** 650C color ink jet printer are water soluble. They can be fixed for field use of a print and protected against fading by spraying the output with a clear, matte, waterproof spray such as those used on charcoal drawings and artwork. A typical spray which will work is Blair Spray Fix #150 available from most art stores or Blair Art Products, Twinsburg, OH 44087. The ink jet output can also be laminated.

Tektronix 4693DX.

This older 300 dpi color thermal transfer printer previously support by **MIPS** is now supported by **TNTmips V4.4**.

New Scanners Supported

No new color scanners were supported by **TNTmips 4.4** during the quarter, but support for several should be available by the time you read this memo. Call technical support if you need the use of one of these devices before receiving **V4.50**. They include the Nikon Coolscan, a low cost, high resolution, 35 mm color scanner which interfaces via **SCSI**. Also, being supported are the new Calcomp large format (24", 36", and 44") grayscale scanners which are identical in every way (except name decal) to the Ideal/Contex scanners which also interface via **SCSI**. The Epson ES-300C or G520A flat bed color scanner supported by **MIPS V3.33** is being supported by **TNTmips** via **SCSI**. The Nikon LS-3500 high end 35 mm color scanner supported by **MIPS V3.33** has now also been supported by **TNTmips**. Support of other new scanners will also accelerate now that we have a new software engineer familiar with this activity.

GPIB or **IEEE 488** Interface Cards.

The users with color scanners such as the Howtek Scanmaster series and others are using National Instrument's **GPIB** interface card. If you are using the GPIB version of this board it may never work with MS W3.1. If you have an earlier board with a **ASSY** number starting with 180xxx it will never work with MS W3.1 based software. If your board shows an ASSY number starting with 181xxx it will work. Generally the **ASSY** number is located in the upper left corner, third line down.

National Instruments has quoted the following prices for exchanging the older boards for new ones which will support **MS W3.1**: \$150 from 8-bit to 8-bit interface version, \$250 8-bit to 16-bit interface (scans twice as fast), and \$150 for 16 bit to 16-bit interface.

MicroImages Utilities (MI utilities are not protected by the hardware key)

The **SAVEFILE.EXE** and **RESTFILE.EXE** utilities have been upgraded to work properly with **DOS 6.0**.

A **MS W3.1** utility has been created to import TrueType fonts into bird fonts on any **MS W3.1** equipped machine (without **TNTmips** installed). See the section on new features for more information.

Service Information Updates

Tape to Disk Service.

MicroImages has previously performed only one specialized data service for clients. That was the transfer of rasters from open reel tape (Landsat **TM**, **SPOT**, and others) to erasable optical drive cartridges at a cost of \$200 per tape/scene. This is offered for clients who do not buy many such antiquated tapes and do not want to purchase a tape drive for such casual use. Furthermore, the many different tape formats used are hard and ridiculous enough for MicroImages to keep up with.

MicroImages will now also offer an additional service of this type to its software users via its **CD-R** (write-once **CD-ROM**) drives for \$200 per tape/scene. Downloading images into ***.RVC** format onto **CD-ROM** blanks is particularly useful as it can then be used directly from the **CD-ROM** if the rasters are linked only and the small "glue" ***.RVC** project file is moved to the hard drive where it can be kept current as the images are used or modified (for example, when georeferenced or color balanced). The general types of images which will be downloaded will be restricted to a few which include Landsat **TM**, **SPOT**, Russian 8 mm photographs, and related. Those wanting other more general transfer services to **CD-ROM** will be referred to one of the several MicroImages Reps or **VARs** who offer such services. MicroImages is also willing to use this service to create a few initial **CD-ROMs** of HyperIndex stacks for initial demonstration use in **TNTview** or **TNTatlas**. These large stacks can be provided to MicroImages on **EO** cartridge, 4 mm **DAT**, or 8 mm tape in **TAR** format.

If you plan to prepare stacks, ***.RVC**, and other data to write on **CD-ROMs** in the 9660 format please make sure to restrict your file names to the proper character set. MicroImages has defined a very restricted character set (more restrictive than required for 9660) to insure that file names will work with all platforms currently supported. Using these restrictions will insure that your file names will not be mangled when transferred to the **CD-ROM** and more importantly when read from a specific platform's **SCSI** service of **CD-ROMs**. The restricted file name character set is described in a reference sheet shipped with **V4.40** entitled "File Naming Conventions for Use on All Platforms". An abstracted version of this reference sheet appears in the file renaming discussion of the supplemental documentation section entitled General File Maintenance, and will be incorporated directly into the on-line documentation for **V4.50**.

Color Map Scanning.

A brochure from Land Information Technology, Ltd., in Denver is included. They are offering prompt and good quality scanning of large color maps and related materials at prices starting at \$99 per map and decreasing to \$25 per map for a whole state. Their prices include the rapid acquisition of U.S. topographic maps from the nearby Denver

Federal Center. Large scale color scanning service is not yet available from a MicrolImages client, Rep, or Reseller.

MicrolImages has examined their sample color scans which were provided in a form which mapped all colors into 32 colors. They produced realistic map displays in **TNTmips** and had good definition of linear features (for example contour lines) in 1 or 2 colors and the white and green background colors were also restricted to 1 or 2 values. This color compressed data would work well in the **TNTmips** raster to vector conversion processes such as smart color line following. You may also request the scan be provided in three 8-bit color rasters of red, green, and blue so that you can subsequently manipulate the full color spectrum within **TNTmips**.

GIS Bulletin Board System.

Information on the **GISnet** bulletin board is enclosed. Those MicrolImages clients who might use this service may want to request a **TNTmips** forum be established.

Exclusive International Representatives

France

MicrolImages products will also now be sold in France by expanding the territory of Nigel Press Associates located in London to include all of France.

Advanced Users' Workshop 6 (AUW6)

For the 6th straight year, Bert Wallace, owner of the Peace Pipe Cattle Ranch in the great sovereign state of Texas, has signed up for the Advanced Users' Workshop. He is also usually the first to pay, as he was this year. Bert was the second person in the world to purchase **MIPS V1.00** a lot of quarters ago and knows about as much about the use of **MIPS** and **TNTmips** as anyone including those at MicrolImages. He has maintained his subscription and used the product regularly ever since in the management of his cattle ranch when not on horseback. At the last workshop he jokingly complained that he was now having to build on to his ranch house to accommodate his system. Who says cowboys and horses are not high tech!

Those planning ahead to attend **AUW6** should let MicrolImages know if they would like to have an opportunity scheduled during the evening sessions to a particular new advanced application. As in the past everyone is encouraged to bring along samples of their wonderful work and products to be posted up all over the halls and rooms as part of the informal reference materials in a continuing coffee break and revolving poster session. MicrolImages will supply mounting boards and glue materials to those who wish to assemble things "on the spot".

Questions have already been posed concerning the availability of space/power for your computers and access to MicrolImages computers. You are encouraged to bring and set up your own computer, especially your portables. As usual MicrolImages will have the back room set up for your use, and you will find that everyone is interested in what you are doing. Those who wish to bring only an **EO** disk cartridge(s) or a **CD-ROM** can then demonstrate their work on the machines provided by MicrolImages.

Staff Changes and Expansions

Srisuda (Hui) Gawgirdwiboon is no longer employed as a software engineer at MicrolImages. Srisuda wrote the text editor in **TNTmips**.

Dr. James Chu is no longer employed as a software engineer at MicrolImages. Jim was responsible for the development or management of the photogrammetric processes, 3D display process, surface fitting, classification, and raster filter processes.

Scott Si is no longer employed as a software engineer at MicrolImages. Scott was responsible for the maintenance of the **MI/X** server for **MS W3.1** and the creation of the **MI/X** server with network support for **MS NT**.

Dr. Robert Y. Li has just joined MicrolImages for several months while on a sabbatical sojourn to investigate advanced image interpretation process(es) in **TNTmips**. While Bob's time at MicrolImages is his own to spend, he has initially proposed to add a minimum of another advanced neural network approach into **TNTmips**. Bob has a **BS** degree in Electrical Engineering from Duke University in 1972 and an **MS** degree in Electrical Engineering from Purdue University in 1976 with a thesis entitled "Syntactic Pattern Recognition". His Ph.D. degree in Electrical Engineering from the University of Kansas was completed in 1981 with a thesis topic entitled "A Combined Optical / Microwave Approach to Crop Classification". Previously Bob was an Assistant Professor at the University of Nebraska at Lincoln from 1987 to 1993 where he taught and conducted research in image processing, pattern recognition, and **GIS** concepts. Earlier he has experience in related fields as a Research Scientist at Lockheed Missiles and Space Co. (1981 to 1986 in Palo Alto, CA); a Project Engineer in the Remote Sensing Laboratory at the University of Kansas (1978 to 1980 in Lawrence, KS); and as an Associate Engineer at **IBM** (1972 to 1977).

Randolph G. Arbeiter has just joined MicrolImages as a software engineer for programming. Randy received his **BS** degree in Wildlife Management from Oregon State University in 1971. He also has an **MS** degree in Meteorology from Texas **A&M** University in 1977 and a second **MS** degree in Computer Science from Creighton University in 1992 with a thesis entitled "Pattern Recognition of Acousto-Ultrasonic Signals from Nondestructive Tests of Material". Most of Randy's career in the U.S. Air Force, from which he has just retired, involved computer processing of weather satellite images and other sensor data. With his recent degree in computer science and completion of his career in the Air Force, Randy wishes to concentrate on innovative software creation.

Steve Mackie has joined the MicrolImages team as a software engineer for technical support. This brings to 5 the total number of technical support software specialists provided by MicrolImages to assist via phone, FAX, and training in the use of **TNTmips** and other MicrolImages products. Steve received his **BS** degree in computer information systems from Bentley College in Massachusetts in 1985. More recently he completed a **BS** degree in wildlife biology from Colorado State University in 1992. Between these two degrees Steve was a Second / then First Lieutenant at the Strategic Air Command headquarters in Omaha from 1986 to 1990. During this service he was the Command and Control systems analyst responsible for the team which maintained the **SAC** master strategic information display systems.

Steve Mackie is the 4th software engineer at MicrolImages with the first name of Steve. Needless to say, simply asking for Steve when calling on the technical support phones has a 25% chance of reaching the correct person.

Features missing from V4.40

The **MIPS V3.33** features listed below are not available in **TNTmips 4.4**. These features are being reworked as time allows. If any particular feature listed is specifically holding up your conversion to **TNTmips 4.4** or your projects please let us know so we can give their conversion a higher priority.

Generally used features.

- Raster profile display
- Elliptical arcs - (arc, wedge, and chord) can not be created
- Snap to grid feature is not available in **CAD** editor
- Vector route tracing
- Printers which communicate via **GPIB**, **SCSI**, and Xerox **VPI** cards
- Making legends for the screen and Map and Poster Layout (being redesigned)
- Preparing and showing a slide show
- "**CLASS-CMAP**" - special image analysis routine
- Importing all raster formats directly from open reel **CCT** tapes.

Specialized features used by 1 or a few users.

- Transfer of labels from vector polygons in Feature Mapping
- Dual raster color overlay method for georeferencing
- Automatic interval capturing (intervalometer) in video digitizing
- WDBII** - World Data bank II import (use **RVFTORVC** to convert)