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Release of V4.70 TNT products June 1994



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Release of V4.70 TNT products

Introduction

Status of Client Base.

MicroImages is pleased to distribute the 32 nd consecutive quarterly release of the Map and Image Processing System. During the past quarter over 50% of all those who purchased a system in the past 8 years of its distribution were using **TNTmips 4.6**. Gradually **MIPS**, **DOS**, and the computers which ran these products are fading into obscurity. The Map and Image Processing System (**TNTmips** or **MIPS**) is now in use in **60** nations.

MicroImages now hears from an increasing number of clients who are beginning to take advantage of the new cross-platform flexibility of the **TNT** products. Several different clients have reported this quarter that they went on international consulting trips with **TNTmips** and did not take their computer. All indicated they simply took along their authorization key, the **V4.60 CD-ROMs**, and their own Project Files (some on **CD-ROM**). They reported that they had no special problem installing **TNTmips** on the workstation or **PC** they encountered, even when changing from **PC** to workstation and immediately going into operation. *Portable software and data sets anyone?*

New Features.

The most important new features added to **TNTmips 4.7** include the interactive features in spatial filtering, a new copy vector process with expanded selection of the subarea and elements, a new process to trace routes, new map projections especially **SOM**, linking of **RVC** to many other **BSQ** and **BIL** formats, new features in the style editor, and multiple database fields can be used now generate pie diagrams and histograms as point symbols. Significant speed increases relative to **V4.60** were effected in printing, buffer zone computation, validating topology, and in importing rasters.

Improved Reliability.

In addition to the new features and performance improvements, considerable effort has been placed this quarter on improving the reliability of **TNTmips** and the other **TNT** products. This has been obvious to you in the rapid fashion we have been able to solve most of the problems you have identified to us. However, insufficient time was available to clean up every known problem, especially those which were assigned a lower priority and also those processes which are scheduled for a rewrite this quarter. Considerable additional effort will be expended during the next quarter in continuing these efforts to further increase the speed and reliability of the **V4.80 TNT** products. It is hoped that most of the processes will be in top shape in **V4.80** allowing us to turn progressively more attention to adding the new features you have suggested for existing **TNT** processes. During the quarter you can expect that we will be able to immediately respond to the errors you report in all processes except those which are in the process of being rewritten.

New Feature and Error Tracking System

As part of MicroImages efforts to stamp out pesky problems, a new procedure has been created and installed for logging and tracking errors and your new feature requests. This internal system records and tracks error and new feature requests much more logically and assists in setting up and managing the priorities assigned to resolving them. However, it does not help to identify where the problems are within the complex software making up **TNTmips**. Thus, it is still important that you communicate the errors you encounter to us in as much lucid and technical detail as possible and as soon as possible using the forms we have provided, or by phone if that is more convenient. As usual, you will receive a prompt answer from Technical Support and a correction as soon as available.

New Feature Requests

There have been hundreds of minor new features logged in as suggested by you and the MicroImages staff for the existing **TNTmips** processes to make them more easily used. At the present time MicroImages is concentrating on increased speed and reliability in the existing processes and it is unlikely that many of these new ideas will be addressed until after **V4.80** is shipped in September or early October. However, please continue to send in your good ideas and suggestions which are being recorded, but be patient a couple of months longer and then they will get the serious attention they deserve.

Widening CD Use

Two **CD-ROMs** for **V4.70 TNT** products are being supplied to every MicroImages client regardless of the status of your subscription for **TNT** products. Floppy disk media for **PCs** and tape media for workstations are also supplied to those who have subscribed to a **TNT** product and specified such other media in their current product registration. Fewer than 5% of the users of **TNTmips** are now receiving their upgrades on any media other than **CD-ROM**. It should be anticipated that sometime in 1995 the distribution of **TNTmips** upgrades using floppy disks will be discontinued or provided at an increased premium.

V4.80 TNT products will be shipped to all active subscribers in September or early October on the normal quarterly release schedule.

Tuning Windows 3.1

As MicroImages has reported previously, there appears to be no meaningful reason to switch to Microsoft Windows **NT 3.1 (MSNT3.1)** for the operation of any of the **TNT** products unless you need its networking features. It is a bloated system which provides no particularly useful new features or speed and simply takes more hardware resources. Please note that at the present time MicroImages can not provide much assistance on how to tune systems using **MSNT3.1**. There is little in the literature at this point about recommended changes to it that its user can make and little experience with it at MicroImages or within our client base. Perhaps **MSNT3.5** will cure some of these handicaps and be worth the resources required. However, again we recommend that you do switch to Microsoft Windows for Workgroups 3.11.

During the past few weeks MicroImages has received over 100 FAXes from clients containing listing of their **AUTOEXEC.BAT**, **CONFIG.SYS**, **SYSTEM.INI**, and **TNTMIPS.INI** files. *In every case* MicroImages

Technical Support staff has recommended changes to these files to optimize each system for the use of **TNTmips**. In some cases experienced clients have everything set up right and we have suggested only a minor tweaking which might be useful. In many cases there have been significant set-up problems which, when corrected, eliminate General Protection Faults within **TNTmips** and significantly increase speed. Thus, MicroImages declares that Technical Support contains the only experts on how to set-up Microsoft Windows 3.1 (**MSW3.1**) for the operation of the **TNT** products! Anyone who has any questions about the instructions provided in our check-list, instructions in the *Detailed Installation and Optimization Manual* for **V4.60** or **V4.70**, or their current set-up for **MSW3.1** and **TNTmips** should FAX these 4 files to us for examination and possible advice on improvements.

The following is another summary from MicroImages Technical support of the things which you should have already done to tune your **MSW3.1** based system for use with **TNTmips** and other large software packages and complicated hardware systems:

In the **SYSTEM.INI** and **[386Enh]** section.

- 1) Add the line `EMMExclude=A000-EFFF` to your **SYSTEM.INI** file. This line will eliminate memory conflicts with add-in components such as a **SCSI** controllers, **CD-ROM** drive, display board, etc. which *cause* General Protection Faults. You would not have to exclude this entire range of memory if you know the memory section which is in conflict.
- 2) You should see the line `PermSwapDOSDrive=xxxx` in this section. If you do not, then your virtual memory for **MSW3.1** is not set up properly. This can lead to slow loading and slow operation of processes. To set up this line:
 - A) First use a hard drive defragmentation program such as Norton's Speedisk or **DOS's** Defrag.
 - B) Start **MSW3.1** and from the Program Manager window, choose Main / Control Panels / 386 Enhanced / Virtual Memory / Change>>
 - C) Set Type = Permanent and Drive = X: where X is a local uncompressed drive.
 - D) The size will depend on how much free hard drive space you have.
 - E) Save the changes and restart **MSW3.1** when prompted.

In your **CONFIG.SYS** file.

- 1) You should have the following lines in your **CONFIG.SYS**:

```
DEVICE=C: \ WINDOW \ HIMEM.SYS
```

```
DOS=HIGH,UMB
```

```
BUFFERS=45
```

```
FILES=90
```

```
STACKS=9,256
```

You will most likely have several more lines but these are the basic lines needed.

- 2) If you are using memory managers in addition to **HIMEM.SYS** you will have to exclude the memory ranges used by the components such as **SCSI** controllers, **CD-ROM** drives, display boards, etc.

In your **AUTOEXEC.BAT** file.

- 1) Make sure the **TNT** directory is in your **PATH** statement.

- 2) Make sure you have the line SET TNTPATH=X:\TNT where X is the hard drive where **TNTmips** is installed.
- 3) If running from a **CD-ROM**, SET TNTPATH=X:\TNT;y:\WIN31 where X is the hard drive where **TNTmips** is installed and Y is the **CD-ROM** drive. Add Y:\WIN31 to your path statement.
- 4) SMARTDRV should be used from **MSW3.1** if your are running **DOS 5.0** or older or from **DOS** if you are running **DOS 6.0** or newer. Here is the syntax to use for specific setups:

A) With **IDE** hard drive and 8 megabytes or less of real memory:

C: \ WINDOWS \ SMARTDRV.EXE 2048 0

B) With **IDE** hard drive and 16 megabyte or more of real memory:

C: \ WINDOWS \ SMARTDRV.EXE 2048 2048

C) With a **SCSI** hard drive, add the following line to **CONFIG.SYS**:

DEVICE=C: \ WINDOW \ SMARTDRV.EXE / DOUBLE_BUFFER

TNTmips™ 4.7

The install routine (**INSTALL.EXE**) for **MSW3.1** is now located in the **WIN31** directory. The install routine (**NTINST.EXE**) for **MSNT-I** is in the **NT_INTEL** directory. The install routine (**NTINST.EXE**) for **MSNT-A** is in the **NT_ALPHA** directory. The single install script which detects and installs the correct version for your workstation is **INSTALL.SH** and is in the root directory on the **CD-ROM**.

If you have subscribed to the use of **TNTmips 4.7**, please proceed to install it from the **V4.70 TNT products' CDs** following the instructions provided by the **INSTALL** process on either disk or in the *Detailed Installation and Optimization Manual* for **V4.60** or **V4.70**. If you did not order **TNTmips 4.7** and wish to do so now, please contact MicroImages by **FAX** or phone to arrange to purchase the required quarterly upgrades to **V4.70**. MicroImages will immediately supply you with an authorization code by **FAX**. Entering this code when running the installation process will allow you to complete the installation and immediately start to use **TNTmips 4.7**.

If you do not have an annual subscription to **TNTmips**, you can still purchase **V4.70** under the elective upgrade plan at the cost in the table below. Please remember that new features have been added to **TNTmips** with each quarter. Thus, the more quarters you are behind **V4.70**, the more your upgrade will cost up to a limit. Upgrades from all versions of **MIPS** and **TNTmips 4.2** or earlier are the same, fixed cost. As usual, there is no special additional charge for the upgrade of the peripheral support features which you may have added to your basic system.

Product Code	Price to upgrade from TNTmips :					MIPS : any version
	V4.60	V4.51	V4.40	V4.30	V4.20	
D30 to D80 (Cds)	\$250	450	600	700	750	750
D30 to D80 (floppies)	\$300	560	750	875	940	940
U45 (Cds)	\$250	450	600	700	750	750
U100	\$375	675	900	1050	1125	
U200	\$780	1400	1875	2200	2350	
U300	\$1030	1850	2475	2900	3100	

Loading a full installation of the **TNTmips 4.7** onto your **PC** hard drive for **MSW3.1** will require just less than 74

megabytes with an additional 14 megabytes for the illustrations. The full install of the **TNTmips 4.7** processes onto your **PC** hard drive for **MSNT-I** (Intel) will require 98 megabytes with an additional 11 megabytes for the illustrations. The full install of the **TNTmips 4.7** processes onto your hard drive for **MSNT-A** (Alpha) will require just more than 107 megabytes with an additional 17 megabytes for the illustrations.

The full installation size, including illustrations, will vary for workstations depending upon the platform type as follows: Data General = 90 mb; Hewlett-Packard = 103 mb; Sun SPARCstation with Solaris 1.x = 95 mb; Sun SPARCstation with Solaris 2.x = 80 mb; SGI = 106 mb; Mac via **AU/X** = 85 mb; DEC Ultrix = 107 mb; and IBM RS6000 = 143 mb.

TNTlink™ 4.7 for TNTmips 4.7

No specific changes were made to this process during the quarter.

TNTsdk™ 4.7 for TNTmips 4.7

The only specific change which directly affects the use of **TNTsdk** is the addition of the new **CUSTOM** directory method to **TNTmips** for immediate use of your executable process via a new **CUSTOM** entry on main menu bar. The use of this new feature will be described below in the section on New Features.

A new brochure describing the **TNTsdk** product and its general use is included with **V4.70**.

TNTview™ 4.7

No specific changes were made to this process during the quarter. The 350 page printed manual on the process is scheduled to go to the printers this week. It will be mailed to all MicroImages clients as soon as it is available.

A new brochure on the **TNTview** product and its general applications is included with **V4.70**.

TNTatlas™ 4.7

No specific changes were made to this process during the quarter. The small printed manual on the process is scheduled to go to the printers in several weeks. A sample **TNTatlas** of San Francisco on CD-ROM is also nearing completion. Both will be mailed to all MicroImages clients as soon as they are available.

A new brochure, special price list, and free sample offering on the **TNTatlas** product and its general applications are included with **V4.70**.

TNTdemo™ 4.7

Only minor changes were made in this product during the quarter. A special reference page is attached to this memo showing the new startup advice now provided in the **TNTdemo** package. This same information has also been added into start-up screens which are presented to the user each time **TNTmips** is started.

On-Line Documentation

The on-line documentation has received the appropriate modifications for several of the new features added. However, the documentation staff has concentrated upon finding and recording errors in the new tracking system and checking to see that they were corrected.

For the first time the complete integrated on-line manual, including illustrations, is being included on the CD-ROM in Microsoft Word for Windows V4.6 format and separately for the Macintosh Word **V5.1a**. These files for each major chapter can be directly loaded from the **CD** into Microsoft Word for the PC or Macintosh and used without alteration. You can save these files to your hard drive, print these files with all illustrations and with or

without the hidden index codes, cut and paste, retrieve and use individual illustrations, translate sections, etc. Should you decide to print the entire copy of the on-line documentation via Word you will find that it is identical to the printed copy which MicroImages provides to Kinko's Copy Center in Lincoln for reproduction and resale to you.

An equivalent of 1528 single-spaced printed pages of on-line documentation are included with **V4.70**. Last minute, additional sections were completed for the newest features in **V4.70** after the master disks were created for the reproduction process. These 23 additional pages are included in supplemental, printed form.

As in the past, a master copy of the **V4.70** 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 receiving directly with **V4.70**. 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 1528 pages for **TNTmips 4.70** (specify single or double sided) is approximately \$120 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.

MicroImages X Server (MI/X)

No significant changes were made in **MI/X** during this quarter except the often requested correction to the tool color management so that tools now show up whether the background is black or white.

DEC Alpha via OSF/1

Some last minute difficulties were experienced with the new release of the **TNT** products for DEC Alpha based platforms using DEC's **OSF/1** flavor of Unix. As a result this new version did not make the deadline for release on the **V4.70** **TNT** products **CD-ROMs**. However, it is now available for purchase or use by those MicroImages clients who already have a **U100** or greater license for **TNTmips**. Should you purchase this new version of **TNTmips**, or need it for your existing **U100** key prior to the release of **V4.80**, it will be provided on an individually prepared **CD-ROM**.

As you may already know, the Alpha chip is a 64-bit processor. The previous releases of the **TNT** products for the DEC Alpha via Microsoft's **NT** are 32-bit compiled processes as that is how **MSNT-A** and its **ANSI** standard **C** compilers use this 64-bit Alpha processor. Thus, **TNTmips** for **OSF/1** has been adjusted throughout so that it compiles for 64-bit use providing increased speed, especially in floating point computation. This is the first 64-bit version of the **TNT** products. However, with the "behind-the-scenes" adjustments made to the **TNT** source code and libraries this quarter, this new 64-bit version now compiles from the same single set of code as all other versions and provides the identical capabilities.

The prices for the **OSF/1** version of the **TNT** products will be the same as for any of our other Unix and workstation based products (for example, **U100** = \$10,000 and so on).

Apple Macintosh via System 7.x.

As many Macintosh users already know, Apple has discontinued development of their own special Unix called **A/UX 3.x** and has variously announced several haphazard plans for some future flavor of Unix for their Power Mac computers. Upon the past announcement of the demise of **A/UX**, MicroImages began development of the **TNT** products for native use on the Macintosh for both the Motorola 680xx and Power PC based systems using the **MI/X** approach. It is with pleasure that MicroImages announces the likely shipment with **V4.80** of two more versions of all the **TNT** products for operation under Apple's system **7.x**. One version will be compiled for the Motorola 680xx based systems and another for native use on the Power PC based systems. Neither will use any Unix, but both will provide an identical X/Motif interface via an X server just as the **TNT** products operate within Microsoft Windows **3.1** and **NT**. Of course, the user interface within **TNTmips** and the other **TNT** products will be identical to that used on all the other platforms and the **RVC** file structure and resulting Project Files will be completely transparent and portable to any platform which uses them. At the present time MicroImages anticipates no differences in the way in which the PC and Mac based products operate.

When these new versions of the **TNT** products are available for the Macintosh computers, MicroImages will

discontinue support of **A/UX** and any other Unix based approach on the Macintosh until Apple gets its act together and provides a reliable Unix product. All those who have purchased **TNTmips** for use on the Macintosh via **A/UX** whose subscription is current at the time of the availability of these new versions will be able to install and use either model for the Apple processor they have, regardless of the price changes noted below. MicroImages is confident that those users of **TNTmips** via **A/UX** will celebrate when they can kick **A/UX** off their platforms!

The use of the **TNT** products via **A/UX** was restricted to those selected platforms for which **A/UX** was available and did not include any Macintosh portable, Power Mac, or some of the 680xx based units such as the **VX**. MicroImages anticipates that the new versions of the **TNT** products will run on all Macintosh systems including their old and new color portables.

The current price for the existing Macintosh version of **TNTmips** is \$4500 for any display resolution plus the cost of **A/UX**. Tentatively the price for the revised native versions of **TNTmips** for both Mac versions will be \$5000, but this may be subject to change without notice.

Sun Solaris 2.3

Solaris 2.3 does not require the Sun patches required for previous Solaris 2.x versions to run **TNTmips**. MicroImages suggests that you immediately acquire and install it if you are using an earlier version of Solaris 2.x.

Use on 586 based PCs

Are you still using the same 386 computer you started with? If you are still on a 386 then the following table will help you understand the level of performance increase you can expect when you can move your investment in time and MicroImages software up to a current Microcomputer.

Upgrade step contemplated	interim performance increase:	total performance increase:
386/20 to 486/20	2X	
486/20 to 486/66	3X	6X
486/66 to 586/60	2X	12X
586/60 to 586/90	1.5X	18X

The speed of processes in **MIPS V3.33** could be taken as approximately equal to that of **TNTmips 4.51** when running on the same 386 computer. Thus moving up from your 386 computer and **MIPS** to a 586 computer and **TNTmips** will conservatively provide you a performance increase in processes of at least 3 to 10 times. The extensive new features now in **TNTmips** are simply an added dividend over and above these marked processing performance increases. You can now have workstation performance on your desktop without the trauma and cost of maintaining a workstation.

Comparison of Computer Performance

MicroImages is periodically requested to comment on, or recommend a type of computer platform based upon our work with many brands. The following table provides a comparison of the performance rating of some of the currently popular brands. From this table you may draw your own comparisons and conclusions. These comparison numbers have been compiled from a number of recent articles and published tables. However, due the similarity in entries found in these source tables for common machines, these comparisons are considered to be reasonably reliable on a relative basis.

	Mhz	fp92	int92	mb	gb	US\$
Intel 586 based PC						
Unknown brand	90	72	90	16	.52	4000

Digital Equipment Corp.

DEC 3000 Model 300LX AXP	125	77	49	32	.53	5300
DEC 3000 Model 300 AXP	150	91	66	32	1.05	10000
DEC 3000 Model 600 AXP	175	165	88	32	.54	20000
DEC 3000 Model 800 AXP	200	187	99	61	1.05	36000

Hewlett-Packard Co.

HP 9000 Series 712/60	60	79	58	16	.26	4000
HP 9000 Series 712/80I	80	79	84	16	.26	8800

IBM

Powerstation 25T	66	72	63	16	.54	9400
Powerstation 365	50	99	58	16	.54	16200
Powerstation 58H	55	203	98	64	2.00	70000

Silicon Graphics, Inc.

Indy	100	37	37	32	.54	7000
Indigo 2	100	62	59	32	1.00	7000

Sun Microsystems Computer Corp.

SPARCclassic	50	21	26	16	.21	3000
SPARCstation 5	70	47	57	16	.54	4000
SPARCstation 20 Model 50	50	78	69	32	.54	12200

MHz = processor clock speed

fp92 = SPECfp92 SPEC stands for System Performance Evaluation Cooperative

int92 = SPECint92

mb = memory in megabytes

gb = hard drive capacity in gigabytes

\$ = retail price in US\$

SPECfp92 and SPECint92 measure processor speed, memory bandwidth and compiler effectiveness, using floating point and integer, respectively.

Internet Support

MicroImages has been gradually expanding our knowledge and use of Internet in connection with supporting you. The attached page describes the Internet based technical support services currently available from MicroImages and how to use them. Unfortunately, the possibility of Internet fraud and break-ins require that we move slowly into this technology to protect you and our products.

New TNTmips Features

* Paragraphs or main sections preceded with this symbol "*" introduce significant new processes or features in existing processes which are released for the first time in **TNTmips 4.7**.

System Level Changes.

The File Selection window now retains the last file used as the default by extension (e.g. *.TIF) for better default selection. Thus if you are selecting a *.TIF file it will default to the last *.TIF and similarly if you want a *.RVC and so on.

* New Raster Buffering.

The **RVC** read/write function has been modified so that it can hold in memory and serve up an entire row of raster tiles or the subportion needed for the specific application process. This is technically referred to as caching an entire horizontal row of tiles (i.e., as cache-tile-row buffering). This new addition is responsible for part of the further speed improvements you will find in **V4.70** such as in preparing large prints.

Instead of reading several tiles in a row as in **V4.60**, but not all of them that span the width of a raster, the process can load or create a space for a single row of tiles which span any raster type and width, even if virtual memory is needed. The actual application process using the raster, such as exporting or rotating, then accesses the raster data line by line out of this tile buffer. This results in significant speed improvements across several different processes such as raster import/export and printing where the application has been revised to take advantage of this feature. Other raster processes will be modified to incorporate this improved approach in the next quarter.

* Changing RVC Buffers.

You can now set the size of the internal buffer used by the **RVC** read/write functions in the **TNT** products to increase speed if extra real memory (not virtual memory) is available. The default size is 256K. It can be set to some other value in the **TNTMIPS.INI** file under the heading **RVC**. Example:

```
[RVC]

MinBufferSize=1024
```

Note, the real memory you set aside in this fashion for **RVC** buffering affects only the reservation and use of this memory during the operation of **TNTmips**. Changing the size of this internal buffer has no impact on your general windows setup for other software. Alternately, note that this real buffer memory is not available for use for any **TNTmips** application process, so do not set it too high or every other **TNT** process you use will start swapping out to your drive for virtual memory.

If you change this internal buffer from its default size you may need to experiment to tune your **TNTmips** to determine the best buffer size setting. What is optimal is dependent upon what you typically do with **TNTmips**, the amount of real memory you have, and how many **TNT** processes you typically concurrently start up.

The most useful circumstances under which to increase the **RVC** buffer size is when you are working with large vector, **CAD**, and/or database objects. Some **TNTmips** processes, such as editvect, editCAD, validate topology, and others do not deal with these objects in a linear fashion. Thus they work more efficiently if a larger internal buffer can be provided for the **RVC** read/write processes. However, raster processes use the new transparent caching of a horizontal row of raster tiles described above to improve their buffering operations without any changes in the internal **RVC** buffers. Since most raster operations tend to be linear (proceeding through the object line-by-line), increasing the size of the internal **RVC** buffers would not be productive.

Technically, the buffer size depends on the total amount of memory available and the number of processes running concurrently on the machine. If you usually run only one application process with **TNTmenu** and **MI/X** and you have 16 megabytes of real memory in the machine and 30 megabytes of virtual memory, then setting this buffer to 512 kilobytes or 1 megabyte is recommended. If you plan to have 2 or more extra processes running at a time, the default should not be changed unless you have more than 16 megabytes of real memory. As a starting rule of thumb, setting this buffer at 1 megabyte for each 16 megabytes of real memory in the machine should be optional for most **TNTmips** systems and their typical applications.

Timings.

A new minor process (Support / Timing) is available to perform timing tests of various file read/write operations. It is useful for determining the speed of various hardware and software components on your system and how they impact the operation of **TNTmips**. This file access process may be used to determine and report the rate at which data may be read from, or written to, various hard or removable drives on your system. Data may be processed as a

raw file or as a raster object. This can be useful to determine if a particular **TNT** raster process is performing well. It is based on the fact that it is not possible for any **TNTmips** raster application to process a raster from an **RVC** file faster than your system can simply read the equivalent size file and do nothing else.

For example, if a large raster object takes "too long" to process, you can determine the optimal time by simply reading such a raster object using the "timing" process. To compare the speed for reading it as a raster object by **TNTmips** to the speed for reading it as a raw data file by your system, select the "Read Raster" operation. Press "Run..." and select a single (relatively large) 8-bit raster object. After completion note the timing results. Next select the "Read File" operation and press "Run...". Select the same **RVC** file as was used in the "Read Raster" test. The average rates should be comparable with the raster object operation being slightly slower due to **RVC** processing overhead. Now compare these times it takes to use that raster (or combination of rasters) in a **TNTmips** application process. If they are all slow then reevaluate your system components. If they are vastly different and it is a simple process, then notify Technical Support so that the efficiency of the application can be examined.

This comparison between the reading via **RVC** and directly reading the file by your system can also help you determine if your speed problem is due to a slow drive or interface, fragmented drive, or the size of the file and not the **TNT** process. MicroImages has noted dramatic (10 to 1) differences in drive access using this timing feature and comparing the internal Local Bus controller and hard drive in a Gateway 586 with a fast external hard drive interfaced via an old Trantor T130 8-bit SCSI interface bus card added into the same Gateway. Using yesterday's slow T130 completely negated any of the Pentium's fast processor benefits. Beware, intense competition has now forced no-name or local clone manufacturers to survive by using yesterday's cheap, slow drive interfaces and other cheap, slow, older interface and bus components.

Map Projections.

Several new map projections have been supported. These include the Landsat Space Oblique Mercator and Bipolar Oblique Conformal Conic. Support for 18 new ellipsoids has also been added.

* New Custom option on main menu.

The procedure noted in a previous **MEMO** by which you can directly add the process you develop using **TNTsdk** or an **SML** is now available. It significantly simplifies how you add these processes to your **TNTmips** menu. It works like the method used with the Apple Macintosh to add extensions to the top menu bar on the desktop under the "apple" symbol.

First create a new directory named **CUSTOM** within your **TNT** directory and copy your **SML** scripts and executable processes into it. When you restart **TNTmips** you will find that the main menu bar contains a new "Custom" menu entry at the right end. Pull down this "Custom" entry and you will find that this menu contains the file names (without extensions) of the scripts and executables you copied into the **CUSTOM** directory. Select any one of these menu entries and that process will run.

You can further organize things on this "Custom" menu by creating subdirectories in the **CUSTOM** directory. Any subdirectory you create in the **CUSTOM** directory will also appear on the "Custom" menu and, if selected will show a cascading menu containing its subdirectories, scripts, and executables for selection.

If you wish to experiment with how this new customizing procedure operates and you have no scripts or programs, simply create the **CUSTOM** directory and duplicate one of your commonly used **TNT** executables into this directory. When you restart **TNTmips** you will find that the process can now be started by selecting its name from the **CUSTOM** pull down menu.

Display 2D.

Color map management has been altered so that tools will now show up white if used over an area with a black background.

You may now optionally specify that vector lines are drawn before polygons. If you draw the lines before the polygons you will see the polygon borders in color based upon the polygon attributes. Draw the polygons first if

you are filling polygons and want to show borders in a different color, or if lines also have styles based on attributes.

Importing Rasters.

The raster import and export processes have been completely overhauled to increase their speed and reliability. All important raster import formats are being revised with the new features and improvements outlined below. Several less well known formats had not been reworked at the time of the preparation of the **V4.70 CD-ROM** masters so if you find your favorite raster import process is still of the old format and features, please request a revised process via Technical Support.

IMPORTANT. MicroImages again indicates that if you have a new raster format which you can not conveniently import via the generic approach, then it will be added to the menu or the generic approach altered to accommodate it. At present MicroImages is looking for new raster formats to add to the process since this is relatively easy. To accommodate those of specific interest to you MicroImages will need you to supply 1) the complete documentation of the format and 2) several samples of data sets in the format.

* Linking to many additional formats can now be used in addition to TIFF and TGA including ERDAS, Terra-Mar, LVT, TM-Fast, **TM-TIPS**, **DISIMP**, and others. In fact you may link to any format or subwindow of a raster (s) which you can generically import which is **BIL** (band-interleaved-by line) or **BSQ** (band-sequential), but not **BIP** (band-interleaved-by-pixel). These are significant advanced features provided to you only by **TNTmips**. With them you can link to, and work with, the images and formats of most other image processing systems (even via a network) without actually importing them. So link to all these foreign rasters, do your first process, and write the result into an **RVC** file and save hard drive space. This is particularly useful if the source images are large and on **CD-ROM** such as **SPOT**, **TM**, **ADRG**, color map or airphotos scanned into **TIFF**, etc.

The user interface for the import/export processes is now standardized. The window retains the mode (i.e., import or export) and the object type (i.e., raster, vector, **CAD**, etc.) as a default.

* You may also select multiple file imports for most foreign raster formats. There is also an option for automatic file name generation when you import a large number of raster objects.

* You can now optionally import a subwindow of many foreign raster types. Simply specify the line/column range to be extracted from the source raster. An even more significant addition is that when you choose to link to the foreign rasters as outlined above, rather than import them, you may also specify the subwindow to be used in the link and all subsequent **TNTmips** processes. Again this is significant when dealing with large images, building **TNTatlases** from foreign rasters, etc.. However, remember that when you link to a raster, rather than importing it, you will usually lose the speed and other benefits built into the buffering and tiling of a raster object which has been imported into the ***.RVC** format.

Spatial Filters.

The window layout for this process has been significantly improved and the on-line manual rewritten to reflect this. There are now only two menus: Filter and Size on the top menu bar. The type of filter being applied and the output type are now shown as option menu buttons. These changes were made so the information visible would immediately show what is being done. Input rasters are now selected by pressing a button labeled "Rasters". You change the size of the filter kernel in two ways: you can quickly change to several preset sizes under the "size" menu, or you can edit the "Length" and "Width" area by clicking inside them and typing in new numbers in the range 2 to 50.

* "Test" is a new option under the "File" menu of the top line menu bar. To activate this choice you must select one or more input rasters, and then click on one of them. This will highlight the raster you selected. Then when you select "File - Test" a new window will open that displays a copy of the raster selected. The circle, box, and polygon tools are available to select whatever area of the raster you desire. When you have outlined an area and press the right mouse button, whatever filter options you have selected in the main window will be applied to the selected area and displayed in the selected area. This will allow you to immediately see what effect your choices have on the image. You may leave this display up and go back and make any changes you wish in the main

window, and then go to the test window and press the right mouse button again. The original contents of the selected area are filtered again according to your new choices. This allows you to rapidly interact with your filter kernel characteristics and immediately see the results of the changes until you achieve exactly the effect you desire. You can also easily restore the original contents of the area, or you can select a new area. Finally, if you decide to save the displayed raster object as it appears on the screen, you can select "File - Save As" and save it wherever you wish. You must close the test window before you can filter the list of input rasters.

Converting Color₂

Refinements have been made to the interface and the processing time of any inputs is displayed when processing is complete.

Stereo to DEM₂

The errors in this process which required peculiar workarounds were resolved. However, the basic process has not been altered in any way and still produces the same results.

Importing ArcInfo **E00** format₂

* In **V4.60** you could only import the uncompressed version of Arcinfo 'EXPORT' or *.**E00** files. You can now import either compressed or uncompressed forms of the *.**E00** files. MicroImages thanks those who supplied test files for this purpose. These files also allowed adjustments to the import process so that every test file provided now imports correctly.

Importing the Digital Chart of the World₂

This import process has been refined and improved based upon your input. You can now specify the latitude and longitude extent or area of interest and the theme(s) and import just your area of interest. Any excess nodes which are created as part of the internal formation and validation of the topology of the vector object you are creating from the **DCW** data sets are automatically purged as part of the improved import process.

Copying Vectors₂

This process was completely rewritten to add features, solve problems, and improve its interface. You are now able to mix different vector element type selections and region selection. For example: you can select to copy all lines by query, omit labels or polygons, copy all points, and select extents using State Plane coordinates. The result is that only lines and points that meet the query and exist inside the extent specified will be copied to the new vector object. **V4.70** now also correctly retains and transfers any HyperIndex® links which were present in the original vector object.

Validate Topology₂

The separate process used to validate the topology of a vector object (often referred to as "Fix") has been rewritten to improve reliability and speed. As you know, this stand alone process is also incorporated into several other **TNT** vector processes (mosaic, edit, import, copy, etc.) which create new vector objects so these improvements are available elsewhere as well. **V4.60** of this process occasionally, in very large objects, would encounter a unique, single condition it could not resolve. This especially occurred in objects imported from **MOSS** data sets with extensive crisscrossing dual polygon boundaries which created a large number of sliver polygons.

The revised validate process also removes any excess nodes generated in creating correct topology. It requires approximately 10% of the hard drive space for temporary files relative to its equivalent in **V4.60**. It is at least twice as fast as the previous **V4.60**. It now also correctly retains and transfers any HyperIndex® links which were present in the original vector object.

At present MicroImages does not have any test vector objects, client supplied vector objects, or sample foreign data sets to import whose topology is not resolved by this revised validate process. Should you encounter such a data set or vector object please provide it to MicroImages via Technical Support so that the process can be

adjusted for the special case(s) it contains.

Editing Vector and CAD Objects.

These processes received considerable detail corrections. For example, improvements have been made in how you edit lines. Both the processes have now been scheduled at a high priority for a complete rewrite to further improve reliability and integrate both into a single edit process handling multiple vector and **CAD** objects.

* Graphical Symbols.

Graphical symbols for points in a vector object can now be displayed, pin mapped, or printed in Map and Poster Layout. At present the symbols can be pie diagrams and small histograms or bar diagrams. This feature is actually the major selling point of products such as Mapinfo, Atlas GIS, and others. The specific points selected and the size, number and size of parts, and colors of these symbols are controlled by your database query on multiple fields. Attached are illustrations of the use of this new feature which clearly illustrate its use. Printed supplemental documentation is also enclosed (not yet in on-line manual) which describes how this new feature is used.

* Point Symbol Editor.

There have been many changes and additions to the point symbol editor to make it easier to use, provide additional features, and to quantitatively control symbol design. There are two new toggle buttons at the bottom of the dialog: "Snap to Grid" and "Manual Edit".

"Snap To Grid" turns on this feature to make it easier to place symbol components. This button was actually there in **V4.60**, but only worked for the circle tool. It now works for all tools!

When "Manual Edit" is toggled on and any editing tool is active, it will present a new "Manual Controls" dialog box allowing you to enter the exact coordinates of the components of the symbol. The coordinates are in screen pixels as seen in the symbol editor. The actual size the symbol will be drawn at is determined by point styles. This new feature was requested to match a comparable feature in Arcinfo where symbols must be precisely created to support their rescaling over a large range (as with a font character). For example, a star symbol which is qualitatively drawn at a small size, may appear misshapen when scaled up and used at a larger size. This new manual control approach would allow you to create a star whose geometric proportions are exact.

More component types have been implemented including:

"Circular Arc",

"Circular Arc Wedge" (A pie-piece shape),

"Circular Arc Chord" (Arc with end points joined),

"Ellipse",

"Poly Line" (A non-closed string of points), and

"Polygon" (A closed string of points - optionally filled)

You can now select the color to use for the background in the symbol editor. In **V4.60** and previous it was always black, which made it hard to edit black symbols.

There are two new options under the "Pattern" menu in the symbol editor. "Load To Text ..." and "Save As Text ...". These options allow you to save a point symbol in an external text file (*.SYM) and load it back. This provides for a method of moving point symbols from one style object to another. The format of the text file is provisional and subject to change as you suggest new requirements.

Designing Vector/CAD Styles

The user interface on this process has been revised so that you can now get directly to the style editor from "Prepare" on the main menu. You are then prompted to select any style object or select "<new object>" to create a new one. The style object selected may be a main-level object or a subobject under a vector or CAD object. After selecting the style object, a small dialog with four buttons is presented. The buttons are: "Edit Point Styles...", "Edit Line Styles...", "Edit Polygon Styles..." and "Exit". Pressing any of the first three buttons brings up the normal style editor for that style type. This is the same style editor you would get in **V4.60** if you selected "Style by Attribute" on the vector or CAD control panels, then pressed "Select...", then pressed "Edit..." to edit the styles.

X-Y Digitizer Support

Support of digitizers was rewritten and revised to fix all known communication problems. The Calcomp Drawing Board and Summasketch III digitizers are now correctly supported. If, after trying **V4.70**, you find any make or model of X-Y digitizer which is not working please immediately contact Technical Support for assistance. If you use a "user-defined" communication set-up for your digitizer, it is now saved in a separate file which will not be overwritten when a new version of **TNTmips** is installed.

* Buffer Zones

The buffer zone process has received further improvements in speed and reliability. **V4.60** was reported to be several times faster than **V4.50** and 20 times faster than the same process in **MIPS V3.33**. The table below shows the improvements in **V4.70** relative to **V4.60** which range from 3 to 60 times faster depending upon the nature of the vector object used.

Attached are prints of the test vector objects and their buffer zones so that you can review the complexity of the input data and the results achieved. The drainage illustration and vector object represents all the hydrology data imported from the TIGER data set for Lancaster County, Nebraska. The city street pattern illustration and vector object is the city-core streets of Lincoln, Nebraska abstracted from the TIGER data set for Lancaster County, Nebraska.

It is suggested that in interpreting these results the most significance be placed on the comparisons of the times since all Pentium 586 tests were conducted on the same Gateway 2000 model 586/66 just as received from the factory. Numbers in parentheses in tables represent the increase in speed on the specific processor of **V4.70** relative to the earlier version noted. For example the **(60X)** represents that **V4.70** was 60 times faster than **V4.60** on the 586/66. Adjacent numbers such as the 34 all represent the time in seconds to complete the tests shown in the attached illustrations. Microsoft Windows for Workgroups **3.11** was used for all tests on 586 and Microsoft Windows 3.1 of the 486.

V4.51 on 586/66	V4.60 on 586/66	V4.70 on 486/25	V4.70 on Sun LX	V4.70 on 586/66
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polygon buffers 25 meters out on both sides of the streets

na	(60X) 2056	(3.4X) 117	(1.5X) 52	(1X) 34
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line buffers 25 meters out on both sides of the streets

na	na	(3.2X) 369	(1.4X) 166	(1X) 116
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polygon buffers 100 meters out from both sides of lake and pond boundaries

(10.1X) 1119	(3.7X) 412	(3.3X) 364	(1.3X) 146	(1X) 111
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line buffers 100 meters out from both sides of drainages

na na (3.7X) 8865 (1.6X) 3794 (1X) 2432

After the **V4.70 CD-ROMs** were completed, the core algorithm by which buffer zones operates was rewritten to see if a totally different approach would yield further improvements in speed. This new algorithm has now been preliminarily tested and it appears at this time that it will be significantly faster (by 5 to 10 times) than the results reported for **V4.70** in the table above. The speed of a vector object run on the 586/66 exceeds those reported from a client site using the latest Arcinfo on a workstation on the identical TIGER drainage data set. By the time you read this memo MicroImages expects to have this new algorithm working in the buffer zone process so that if you would like to try the newest approach please request it via Technical Support.

* Route Tracing (Prototype Process).

A route tracing process is now available for use with vector objects and their associated attributes to determine the "least cost" route between two points. This new process is quite fast. A sample illustration using an imported TIGER file and its attributes is attached to illustrate its use. Printed supplemental documentation is also enclosed (not yet in on-line manual) which describes how this new process is used.

The "best" route is determined by assigning "weights" to the nodes and lines visited in the course of locating a route (start and end node weights are not factored in). Line weights can be assigned from the interface by: "Length" (the default), "None", or "By Query". Node weights can be assigned as "None" (the default), "Z-Values", or "By Query". By default, the weight of a line is the length of the line in X-Y space and the default node weight is zero. Weights can also be assigned by query. If via a query, the symbol "length" can be used to return the actual length of a line (this is sometimes useful to write queries). For example, the following query will determine the "best" route for a cyclist riding through a busy part of town. Busy highways are give a weight of 99999, while neighborhood streets are given a normal weight (the length of the street):

```
If (Class_Codes.CFCC > "A29")
    return Length
else
    return 99999
```

The route tool has several output options. You can elect to simply view the highlighted lines in Display / 2D Window. The route tool has its own separate text window, where the total distance of the route is displayed. You can elect to view each selected node and line in the route, as well as a complete set of directions. Node and line names can be displayed with the following options: node and line names are "TIGER" (by default), "None", "By Query", or by "Element Number". If you are using a vector object imported from TIGER data, the name of a line will be displayed as Basic_Data.Feature_Name and Feature_Type. Node names will be the combination of the line names that connect to the node. If using Element Number, the actual line or node element number will be displayed.

This new routing process is a "work-in-progress" and many new features will be added. You can probably think of some new features already which you should communicate to MicroImages, by talking to the Software Engineer who is creating this process who can be reached via Technical Support or by FAX. Provisions do not yet exist to easily consider one way streets overpasses since TIGER data does not carry this information.

Database Support.

Memo fields are now supported when linking to, or importing dBASE III and dBASE IV files. A memo field is a text field with unlimited length. By contrast, a normal character field in dBASE is limited to 255 characters. The data for the memo field are stored in a second file with the same name as the "*.DBF" file, but with an extension of "*.DBT". These two files must be in the same directory.

FoxPro database memo fields can now be imported or linked to. FoxPro uses almost the same file format as dBASE. FoxPro database fields end in **"*.DBF"**, just like dBASE files. If the database has a memo field, the data for it is stored in a **"*.FPT"** file (instead of **"*.DBT"**).

Further Speed Improvements in Creating a Print-Raster.

There have been major improvements in the time it takes to create a print-raster object. The times shown below to create a print-raster for a full page 44" wide Versatec electrostatic plotter (240 megabyte print-raster object). The test simply prints a 30 megabyte mosaic of the color scans of several topographic maps to a new scale. These times were obtained using a 33 MHz 486 computer running **MSW3.1**. The source raster was on the internal hard drive of the PC and destination for the print raster was a hard drive on a **SCSI** port (never go to and from the same drive for big, operational tasks).

V4.51 17 hours 44 minutes

V4.60 5 hours 45 minutes

V4.70 2 hours 2 minutes

These alterations are significant as Map and Poster Layout is so widely used by so many clients. It is unlikely that additional significant performance increases in this process can be achieved through further software improvements.

New Image Printers/Plotters Supported

Other New Printers.

If you have a favorite color printer which is not currently supported by **TNTmips** please let MicroImages know and an attempt will be made to obtain and support it. MicroImages is currently out of new color printers to support and is looking for work in this area. Please only request support for those color printers which are currently being sold by their manufacturer. MicroImages has already scheduled to support both the new Epson and Texas Instruments low cost (and slow) color ink jet printers as soon as they can be obtained.

CANON BJ200.

The Canon 200 monochrome printer is now supported in the basic **TNTmips 4.7** package (product **P0**) without additional charge via a parallel port. This common black and white ink jet printer has a resolution of 360 dots-per-inch. While this CANON printer is very cheap it is also very slow.

CANON 600, 800, and 820.

The Canon 600, 800, and 820 color ink jet printers are now supported via a parallel port. The model 600 prints at 360 dot-per-inch and for an area of 8.5 x 11 inches or A4-size (210 x 297 mm) and requires **TNT** product **P3**. The models 800 and 820 print at 360 dots-per-inch for an area of 11 by 17 inches or B or A3-size (297 x 420 mm) and requires **TNT** product **P8**. All these CANON printers are very slow and thus should not be selected for use over the comparably priced, equivalent **HP** color ink jet printers such as the 560C and 300XL.

New Scanners Supported

Summagraphics (formerly Houston Instruments).

The LDS-4000, 4000+, and 5000 large format scanners from Summagraphics are now supported for direct use. These scanners have a true resolution of 270 dots-per-inch and a scan area of 36 by 65

inches. They scale in grayscale with a resolution of 6-bits per pixel. All require **TNT** product **S10** for direct use with **TNTmips**.

Support for the new model **HP** Scanjet has been adjusted to accommodate the newly released model **llcx**. This small format color scanner has received the top recommendation in several recent reviews of small format color scanners. This scanner requires **TNT** product **S7** for direct use with **TNTmips**.

New Price and Reference Materials

A new "green" *Price and Reference Materials* folder is included with **V4.70**. It replaces the earlier, out-of-date Price Folder. In general there have been no significant changes in prices and terms except as specifically noted below. MicroImages would like to direct your attention to a 3-page section entitled Clarification of Price Policy. It contains a description of how and why MicroImages has established prices for its products.

Also in this new green folder you will find tables which are complete and current for the peripherals supported by **TNTmips**. New order forms are enclosed for your possible use and convenience when ordering or requesting quotes from MicroImages or our representatives. MicroImages' Domestic and International Terms of Purchase have also been updated to reflect current prices and policies. Should you require additional copies of this "green" folder for your use or others please ask for them.

TNTsdk_

Effective with **V4.60**, **TNTsdk** became an optional product which was added to a particular **TNTmips** system and controlled by the authorization key. Effective with the release of **TNTmips 4.7** there will no longer be any subscription fee to maintain your **TNTsdk** concurrent with your **TNTmips** version. Thus, if your purchased **TNTsdk** for **V4.60** or **V4.70** it will be maintained current with **TNTmips** in the future without additional cost, just as for your optional support for printing, digitizing, and other peripheral features. Those who have **TNTsdk** which is not current to **V4.60** will need to update it before receiving these future automatic no-cost upgrades.

Floppies_

Floppy disks are rapidly becoming history for the distribution of large software packages. **V4.70** with documentation and illustrations requires 45 of 5.25" floppies and 37 of 3.5" floppies. At present only 5% of those using **TNTmips** now receive their releases via floppy disks. Thus, MicroImages is providing first notice that sometime in 1995 the **TNT** products and their upgrades may no longer be available on floppy disks.

Increase in International Subscriptions.

An increase in price will become effective for any new subscription or upgrade ordered for **TNTmips** effective upon the shipment date of **V4.80** in September or October. Any subscription which has been, or is placed before that date will continue to be filled without additional charge until completed.

After the shipment of **V4.80**, new annual subscriptions to be shipped to destinations outside the United States or Canada will increase by \$200 per annum or \$50 per quarter. For example, the new charge for a PC based system will become \$1000 per 4 quarters (up from \$800) and \$1700 for a workstation based single user system (up from \$1500). This additional charge for international annual subscriptions will be used to ship all these international quarterly upgrades via air express instead of air mail. Over the last few years MicroImages has learned by experience that air mail is not a reliable, rapid way to deliver our products and causes MicroImages and its clients considerable grief and problems.

Many international clients are already paying MicroImages extra or providing their account numbers for air express shipment of their upgrades and thus will pay no more with this increase than they currently do. Others may find the increased cost a concern but it is hoped you will understand its necessity.

MicrolImages will be requesting bids from popular international air express carriers (DHL, UPS, and FEDEX) for this service. At present we do not know which carrier will be selected for this new service. Delivery of TNTmips to addresses within the United States and Canada will continue to be made via United Parcel Service ground service.

Workstation Bundle Changes

Effective with the release of **V4.80** of the **TNT** products in September the printer support feature **P15** will no longer be included in the optional support features bundled with the workstation products such as **U100**. Printer support features **P0**, **P3**, **P5**, **P8** (postscript), and **P10** will continue to be bundled with the **U100** series products but can not be credited toward the purchase of the **P15** or higher level printer support.

International Interest Charges Increased

The interest charge assessed to unpaid balances for purchasers from outside the United States will increase from 18% per annum compounded monthly to 24% per annum compounded annually. Unfortunately MicrolImages continues to have difficulty with a few international clients and Representatives who are not promptly paying their debts within the terms of credit extended.

Exclusive International Representatives

As noted previously, OpenGIS has been appointed as our new Representative in Japan. It was also previously noted that the MicrolImages Representatives in India and Italy were dropped.

Negotiations are currently under way for new Representatives in Bolivia, Peru, and Italy with inquiries from India and the Republic of Moldova.

Domestic Reseller and VARs

Landrum & Arras, a Reseller for MicrolImages products formerly located in Arizona, has moved to Anchorage, Alaska. They will now function as a Reseller at their new location of P.O. Box 773261, Eagle River, AK 99577-3261 and can be reached at (907)696-2615.

Application Notes

The first portions of an Application Note on Visualization of Geo-Information consisting of 21 pages has been included for your preliminary use.

Staff Additions

Effective 1 August 1994 Terry D. Peterson will be promoted to the position of Sales Manager for MicrolImages. In this position Terry will be assisting you and new clients in the purchase of MicrolImages products. As this transfer occurs, Terry will gradually phase out of the Technical Support Team and assume increasing responsibility for more of Dr. Lee D. Miller's day-by-day correspondence. This will enable Lee to devote more time to the management of MicrolImages, product feature planning, preparation of marketing materials, advertising, and related responsibilities.

Effective 1 August 1994 Steve Sizer will be promoted to the position of Technical Support Manager. Steve has been employed in the technical support group at MicrolImages for 3 years. In his new capacity he will also be responsible for the quarterly release preparation and shipment of the **TNT** products. As noted below, another technical support engineer has been hired to replace Terry's departure from the Technical Support Team.

Eric P. Moss has joined MicrolImages as a Documentation Specialist. Eric is a National Merit Scholar

and graduate of the University of Nebraska at Lincoln in 1988 with a bachelor's degree in Electrical Engineering. Subsequently he attended graduate school in Electrical Engineering at the University of Illinois at Champaign/Urbana and the University of Nebraska at Lincoln. His most recent working experience has been in the operation of his own small business in Lincoln, NE entitled Digital Ink which was engaged in the design of graphics and publications.

Dmitry E. Frolov is joining MicrolImages as a Software Engineer for code development directly from Moscow in mid-August where he has been responsible for the **GIS** program of VIDAR, the Representative of MicrolImages products for Russia. Dmitry graduated in 1988 with a Diploma as Remote Sensing Engineer from the Department of Applied Astronautics of the Moscow Institute of Geodesy, Aerial Survey, and Cartography. Subsequently he has worked continuously in the creation of software, most recently developing his own system for vector based GIS for sale in Russia. Previous employment was as a Research Engineer for the working group on aerospace methods for the Russian Committee for UNESCO's program on Man and the Biosphere at the Severstov's Institute of the Russian Academy of Sciences.

Michael Varga is joining MicrolImages at the beginning of August as a Software Engineer for code development. He received a bachelor's degree in Electrical Engineering from the University of Nebraska at Lincoln in 1990 and will complete his master's degree in Computer Science from the same University in December with completion of a thesis on the topic of PC Applied 3-D Conformal Imaging. Michael has previously been employed since 1992 as a system's manager and programmer for Sterling Software on a contract for the Strategic Air Command at Offutt Air Force Base in Omaha.

Gregory Wright will join MicrolImages at the beginning of August as a Software Engineer for technical support. Gregory has a bachelor's degree in Physics and Mathematics in 1993 from the University of Nebraska at Kearney. After his several months of "on-the-job" training, Greg will be one of the staff you will be reaching by phone or FAX for assistance. MicrolImages Technical Support Team is now staffed by 3 with physics backgrounds and 3 with computer science backgrounds continuing the policy of supplying technical support via professionals with technical and physical science backgrounds.

Missing MIPS Features

Periodically we receive reports of minor features which were present in MIPS but are not present in **TNTmips**. Gradually we have tried to make sure these were provided via **TNTmips**. Since **TNTmips** is now in wide use, MicrolImages has more time to address such missing features and we would like to make a last and final formal call for you to identify them after working with **V4.70**.

Technical References

You will find for the first time that we have not included copies of technical magazine articles. There were simply too many new reference articles appearing this quarter for their reproduction and inclusion, and thus only their references are listed below. By now MicrolImages hopes you are convinced of the value of buying or regularly consulting one or more of these monthly magazines to keep yourself up to date on the evolution of the PC field and the machines and software which control it. MicrolImages staff review many dozens of computer oriented magazines monthly for technological information and lore. The best single source of up-to-date information which will help you select, set up, and use your PC continues to be PC Magazine.

Optimizing Your Setup.

Streamline SYSTEM.INI. by John Woram. in Windows Magazine. June 1994. pages 208 to 214.

Selecting a New Computer.

Pentiums versus PowerPC: The Battle for the Desktop. by John Clyman. In PC Magazine. 31 May 1994. pages 114 to 123.

100-MHz PCs - The Value Performer. If a Pentium PC is too much, and if a 486 PC just won't cut it, take A look at these 26 of 100-MHz DX4 desktop computers, which are today's PC choice. by Mike Feibus. In PC Magazine. 28 June 94. pages 112 to 163.

90-MHz Pentium PCs - The Pinnacle of Power. Ready to step up to the top-performing PCs available? PC Magazine looks at the first six Pentium/90 desktops and the first Pentium/90 server to hit the market. by Robert S. Anthony. 28 June 1994. pages 165 to 187.

RISC Workstations: Ready for the Desktop. by Jim Seymour. In PC Magazine. 31 May 1994. pages 125 to 173.

RISC Servers: One Size does not Fit All. by Nick Stam and Tami D. Peterson. In PC Magazine. 31 May 1994. pages 175 to 201.

Life after DOS: Which 32-bit operating system will carry you into the future? Its a choice you can't put off much longer. by David S. Linthicum. In PC Magazine. 31 May 1994. pages 203 to 237.

News note on Gateway from Computer Reseller News, 6 June 1994 page 217.

"Pentium systems sales are now about 25 percent of total unit volume at **Gateway 2000**, Sioux City, SD, up from 17 percent in the first quarter, according to the clone maker".

Selecting a Display Board.

Graphics Accelerator Boards - Bit Blasters. This group of powerful graphics accelerator cards have a bounty of useful features specifically aimed at today's computer graphics professionals. by James Karney. 28 June 1994. pages 193 to 225.

The above article compares the latest boards from ATI, Diamond, ELSA, Matrox, Media Vision, miro Crystal, Number Nine, STB, SuperMac. In it, the editors' choices are again all Matrox boards including Matrox MGA Impression, MGA Ultima Plus, and MGA Ultima Plus 200. Speed comparisons included comparing all boards using the Graphics Winmark test give the best marks to Matrox by bus type as follows: (ISA = 6, VL =17, and PCI = 24). Alternate tests using the Winstones also find Matrox to be the fastest (ISA = 44, VL = 54, PCI = 69). In June Matrox reduced the price of these boards by 25%.

It is increasingly evident from the numbers above for the performance of the Matrox boards and many other activities and information sources that the PCI bus is rapidly displacing the VL bus! Please take this into consideration in buying your next PC.

Several board vendors have now announced that they are creating 128-bit graphics accelerated processors for future display boards.

Testimonials

The following is a sampling of the positive testimonials which have been received during the last 6 weeks. Of course we also received a couple of complaints during the same period. Further support has been demonstrated in the last quarter in a prepaid subscription extending to 1997 up to and including **V5.70**. Also the two earliest and lowest serial number **MIPS** of 7 years ago have been continually and continuously updated through **V4.70**.

From an Engineering Firm in Australia.

"This product is winning us a huge amount of work and the company just committed to establishing a National Center of Excellence in GIS in this office. We are also having 4 persons trained by [a Microlmages Representative]. Much praise for [that Representative's] abilities and support."

From a Geologist in Australia.

*"I have been absent in the field for a week, using **TNTmips 4.6** very successfully on a laptop to guide our work."*

From an International Representative.

*"I was a bit worried when I first started this that I would be cutting my own throat by selling the means to do the work, i.e. **TNTmips** but am starting to see now with [client names] i.e. only two licenses that the potential consulting and training work that will be generated is going to be unlimited."*

From an International Representative.

"I upgraded to a Pentium/66 the other day and can really appreciate the difference. This will free up a lot of time and enable me to do a lot more marketing, consulting, and so on."

From an International Representative.

*"I spent a half day last week playing around with **TNTmips** on an SGI workstation and it was very impressive as far as speed goes. They must have had one of the faster RISC processors on board as all the windows processes in **TNTmips** (e.g. opening 2D-display) seemed to be almost in real time to 4 or 5 seconds which would really boost productivity. The multitasking was also very impressive. I have now seen **TNTmips** running on an SGI, SunSPARC and a Data General and the SGI seemed to outperform them all. I like the SGI but only because I haven't seen **TNTmips** run on the other workstations besides the Sun and DG. The SGI seems to have very powerful graphics capability. I should decide on a preferred workstation just in case someone asks."*

From a Consultant visiting a 3rd World Site.

*"They had little experience with **GISs** and that little was on systems like Arcinfo which frightened them. They were very impressed by **TNTmips** even though I didn't have any specific data to play with and had to rely on the data sets you provide with the distribution CD-ROMs."*

From a Domestic Reseller.

*"When I arrived to start training, the assembled [client] staff (mostly consultants) was in the middle of running the **TNTmips** Map and Poster Layout process to print a quarter Landsat TM scene (raster size: about 3300 lines and 3300 columns with **RGB** = TM5 TM7 TM1 with a map grid and scale bars) to their HP 650C color printer. They had started the process at 9 AM and it was still running when I arrived at 1:30 PM (4 hours and 30 minutes). It soon finished (quit without completion). Also, [they] said it was taking 45 minutes to display (Disp2D) the same raster (**RGB** in full). In addition there were many GPFs. So you can see why I was quite exasperated when I called you that afternoon. I want to thank you and your staff for the prompt help given (by Fed Express and by FAX). The performance improvement was remarkable."*

"To make a long story short: by the time I finished implementing your changes to their setup Friday afternoon and again on Saturday, these miserable initial performance indicators had changed drastically as follows: 28 minutes to prepare (17 minutes for a dithered printable raster) and to print (11 minutes for the HP650) the same TM quarter scene with map grid, scale bar, and 3 CAD overlays. Plus, displaying (in full) now took only 32 seconds (if the source was on hard disk). This was on a Pentium (brand unknown having 32 MB of RAM, a gigabyte hard drive, and a Matrox MGA+ graphics board)."

Advanced Users' Workshop 7 (AUW7)

Microlimages' annual Advanced Users' Workshop 7 (**AUW7**) is scheduled for the icy cold days of the

Nebraska winter for January 24, 25, 26, and 27. As in the past, MicroImages will be unable to accommodate visitors on the Monday of 23 January when we are busy preparing for this workshop. More information on **AUW7** will be provided to you as it approaches.

Priroda Satellite Images

Scans of film from Priroda in Moscow continue to be popular with MicroImages clients while we wait for U.S. firms to build and launch their 1 to 3 meter systems. More than one MicroImages client has now negotiated directly with JEBCO or Priroda for custom image collections over their sites on pending missions. These special coverage sites are located in the Washington/Oregon area, Colorado, and Argentina.

The following are the tentative dates for Priroda missions of possible interest to you: about 18 July for 8 meter coverage, 15 September for 5 meter coverage, and 30 September for 2 meter coverage (for Colorado and Argentina).

Scanning Maps

You will find enclosed some promotional sheets from Delta Graphics, a reseller of MicroImages products. They are now offering a service to scan both your aerial film and color map sheets into RVC file format and provide them on **CD-ROM** or other media.

Many of our International clients are not aware of the value of having their color maps scanned in their entirety and geocalibrated. These 8-bit color compressed maps make an excellent background to annotate or overlay symbols from database tables, image interpretations, GIS combinatorial results, access routes, and similar features. The annotated map can then be printed out on an **HP 650C** color printer for use in the field, public meetings, etc.

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11th Floor - Sharp Tower, 206 South 13th Street, Lincoln NE 68508-2010 USA

Business & Sales: (402)477-9554 Support: (402)477-9562 Fax: (402)477-9559

Business info@microimages.com Support support@microimages.com Web webmaster@microimages.com

