Welcome to the Beta release of Khoros!

Khoros is an integrated software development environment based on X11R4 for information processing and visualization. Khoros components include a visual programming language, code generators for extending the visual language and adding new application packages to the system, an interactive user interface editor, an interactive image display package, an extensive library of image and signal processing routines, and 2D/3D plotting packages. This file contains the information necessary to install and acquire the Khoros system.

1. PROCEDURE OUTLINE

Step 1) ftp from pprg.unm.edu (129.24.13.10)

Step 2) untar in KHOROS_HOME

Step 3) run % installit (in src)

Step 4) set up user environment

Step 5) try it out!

2. PREREQUISITES

The following list of prerequisites is for those that plan on compiling the system.

- X11R4 from MIT with current patches (levels 1-18)
- Fortran and C compilers
- You need X11R4 libraries (client libraries, ie, *X, Xaw, Xt, Xmu* and *Xext*) to compile Khoros; however once Khoros is compiled, it will run with an X11R3 server.

If you are just going to use the binaries provided (sun4, sun3, vax, or dec mips) then the prerequisite is to have some version of the the X windows system. Khoros runs best with MIT X11R4 servers using the twm window manager.

3. INSTALLATION PROCEDURE

3.1. STEP 1

Execute the following commands to acquire the TAR files.

a. Use ftp to connect to pprg.unm.edu.

```
% ftp pprg.unm.edu
```

-or-

```
% ftp 129.24.13.10
```

b. Use "anonymous" or "ftp" as the user name.

```
Name (pprg.unm.edu:login): anonymous
```

-or-

```
Name (pprg.unm.edu:login): ftp
```

c. Use your e-mail address as the password; please carefully use a valid e-mail address, as this version site logs all anonymous ftp's.

```
Password (pprg.unm.edu:user): {your valid email address}
331 Anonymous login ok, use your E-MAIL address as the password.
230 Guest login ok, access restrictions apply.
```

d. Get the release notes (this file) for acquiring Khoros via anonymous ftp. (note that "RELEASE_NOTES.ftp" is the plain text file - both ".ms" and ".ps" files are available for those who would like them).

```
ftp> cd /pub/khoros
ftp> get RELEASE_NOTES.ftp
```

e. Set the ftp program to binary mode.
```
ftp> bin
```

f. The next step is to actually get the Khoros TAR files. The compressed TAR files are located in four separate directories: bins (sun3, sun4, vax, decmips), hardcopy, system and data. Within each of these directories, you will find both the compressed TAR file and a set of "split" files created from that TAR file. You can have a functional Khoros system without the data and hardcopy directories, but they are recommended.

To get the system directory:
```
ftp> cd system
ftp> get system.tar.Z
```

The system.tar.Z has been split into many different files; if you have trouble getting the system.tar.Z file, you may try getting each of the split files individually. To use this method, substitute the previous commands with:

```
ftp> prompt
ftp> mget system.[0-9]*
```

The system.listing file contains checksums and a TAR listing of the system files. You may want to use this file to verify the integrity of the transferred TAR file(s).

g. In the above steps, you acquired the "core" of the Khoros system. You will need several of the directories in "system" even if you do not plan to compile Khoros. In order to get bins, hardcopy or data, go to that directory and follow the same basic steps as above.

3.2. STEP 2

Now, you'll need to set up a home for Khoros so that you can begin untarring. This can be done by creating a user named "khoros", or simply by creating a home directory such as /usr/local/khoros or /usr/khoros. You will need about 100 Meg of free storage space to build the system (note: this includes space for the data and hardcopy directories). After creating the home directory, you must set the environment variable KHOROS_HOME. It should be set to the home directory that you created above. For instance, if you created a home directory /usr/khoros,

```
% setenv KHOROS_HOME /usr/khoros
```

All of the TAR files should be untarred in the KHOROS_HOME directory. (In the case of untarring binaries for more than one architecture, you may want to create a binmach directory and untar the bins into different subdirectories.) To untar the system.tar.Z file, use the following commands:

```
% cd $KHOROS_HOME
% zcat system.tar.Z | tar -xfB -
```

If you transferred the split files instead of the system.tar.Z file, you will need to do:

```
% cd $KHOROS_HOME
% cat system.[0-9]* | uncompress > system.tar
% tar -xf system.tar
```

Alternatively, you may use (WARNING: this is not as reliable and doesn't seem to work on bindecmips):

```
% zcat system.[0-9]* | tar -xfB -
```

You should follow the same basic procedure for the data, hardcopy and bins TAR files. After you untar the compressed TAR file, you may want to remove the TAR file to save space.

3.3. STEP 3:

If you ftp'ed binaries, you can put off compiling and skip most of this step. All you need to do is execute the following program to fix the man pages for your site:

```
% cd $KHOROS_HOME/man/utils/tmac
% customize
```

At this time, if you decide to compile the system from scratch you must decide whether you are going to compile the system in $KHOROS_HOME/src or you are going to create source trees for various architectures and compile in $KHOROS_HOME/srcmach/machine_type. If you choose the first method it is easier, but the second gives you much more flexibility for supporting multiple architectures (some of the utilities such as vinstall(1), vsrcconf(1) expect that you have a srcmach directory). These are the defaults for installing the system:

bin	$KHOROS_HOME/bin
src	$KHOROS_HOME/src
lib	$KHOROS_HOME/lib

If you decide to use srcmach trees or want to use alternate locations for binaries or libraries, then you need to read $KHOROS_HOME/hardcopy/src_manage/config_man.ps. (Note that the main reason that you are reading the config_man documentation is to understand the src tree of Khoros and how to change Imake config files.) If you choose to make the system within the src directory, then continue with the instructions here.

Execute the following commands:

```
% cd $KHOROS_HOME/src
% ./installit &
```

If you would like to watch the compile, you can execute:

```
% tail -f make.World
```

Note that if you use the "tail" command to watch the Khoros system compile, you will have to "^C" out of it when the compile has been completed.

The compile will take several hours. Some typical times are listed below.

SparcStation 1	3.4 hours (src mounted on NFS partition)
Sun3/260	4.6 hours (using gcc on NFS partition)
Vax 3500	4.4 hours (using cc on NFS partition)
DecStation 3100	4.0 hours (local disk)

3.4. STEP 4

You need to set up your users environment so that Khoros applications will run properly. The files of concern are: .cshrc, .khoros_env and .Xdefaults.

.cshrc — You must have a path to $KHOROS_HOME/bin and it should `%source .khoros_env`. Print the file $KHOROS_HOME/hardcopy/intro/intro_vol1.ps for more complete information.

.khoros_env — The environment variables used by Khoros are set in the .khoros_env file. Use the file $KHOROS_HOME/dotfiles/khoros_env as a template. Be especially careful in setting TMPDIR.

.Xdefaults Use the one provided to start with; it is in $KHOROS_HOME/dotfiles/Xdefaults. As a note, Khoros was developed using primarily the **twm** window manager which is distributed with X11R4.

3.5. STEP 5:

Now, you are ready to begin experimenting with the Khoros system. To orient yourself, try these commands:

```
% vman intro
% vman khoros
% putimage -i $KHOROS_HOME/data/images/feath.xv
% editimage -i $KHOROS_HOME/data/images/ball.xv
% xprism3 -i $KHOROS_HOME/data/plot_functions/example3.0
% cantata
```

There are README's in the hardcopy directory that explain how to print the postscript documentation. There are about 1800 pages that can be printed. We hope that you like the Khoros system! Questions, comments, constructive criticism and bug reports (and bug fixes!) are welcome; please mail to khoros-bugs@bullwinkle.unm.edu.