Departement van Waterwese en Bosbou
Department of Water Affairs and Forestry

GENERAL PROCEDURES FOR VECTORISATION SOFTWARE

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1. INTRODUCTION

The purpose of this document is to provide guidelines for the various tasks required to provide a vectorisation service on the Vtrak system.

This document should be continually updated as new or changed methods and procedures are established.

The document is not ordered in any particular manner, but rather the particular procedures/guidelines are discussed under the relevant heading.

2. ABBREVIATIONS & ACRONYMS

<>	The <return> or <enter> key on the keyboard
ref#	Reference number
VRLB	Vectorisation Request Log Book
VR	Vectorisation Request
SRLB	Scanning Request Log Book
SR	Scanning Request
DWAF	Department of Water Affairs and forestry
Vtrak	Vectorisation software
GIS	Geographic Information System
Scitex Format	Raster format output Scitex scanner
LSLI format	Raster format output by Dainippon scanner
CPU	Central Processing Unit

3. SUPPORTING DOCUMENTATION & SOFTWARE

3.1. DOCUMENTATION

- Procedures for Vectorisation Requests
- Operational Procedures for Vectorisation Requests
- Procedures for submitting Scanning Requests
- Operational Procedures for Scanning request
- Vtrak maintenance and Upgrade File
- Maintenance Contract between Decca Contractors (Pty) Ltd and DWAF for Corrective and Preventative Maintenance of Equipment
- Vtrak Acceptance Test Procedures Issue 1.1
- Laser-Scan Vtrak User Guide
- Laser-Scan Translate User Guide
- Vtrak Release Note
- Vtrak Installation Guide
- Ingres Manuals
  - Introducing Ingres
  - Installation and Operations Guide
  - Ingres/Net User's and Administrator's Guide
- OSF/Motif Manuals
  - Vol 1. User's and Style Guides
  - Vol 2. Programmer's Guide

- Vol 3. Programmer's Reference Part 1
- Vol 4. Programmer's Reference Part 2
- Vol 5. AES User Envirinment

3.2. SOFTWARE

- Vtrak Version 1.0A
- Cartridge
- Vtrak Version 1.1
- Cartridge
- trak Version 2.0
- Cartridge
- trak version 2.1
- Cartridge
- XI OSF/Motif 1.1.3
- Cartridge

4. PROCEDURES FOR SUBMITTING VECTORISATION REQUESTS

Vectorisation requests are submitted by the user in the manner outlined in the "Procedures for submitting Vectorisation Requests". It is important that the vectorisation personnel ensure that the user is aware of what results can be expected and to propose other options if it seems appropriate.

5. OPERATIONAL PROCEDURES FOR VECTORISATION REQUESTS

The flow of tasks required to fulfil the administrative and technical aspects of scanning requests is outlined in the "Operational Procedures for Vectorisation Requests".

If the source raster data is obtained by scanning of source material on the Screen 1000 scanner, then the flow of tasks to fulfil the associated scanning request is outlined in the "Procedures for submitting Scanning requests" and the "Operational Procedures for Scanning Requests".

6. VTRAK MAINTENANCE

There are four aspects to the Vtrak system maintenance, namely hardware, system and peripheral software, Vtrak software and routine data maintenance.

Hardware maintenance of the equipment required for operation of the Vtrak system, excluding the mapstation console, is fulfilled by the system administrative staff responsible for the network and hardware of the WAGIS system.

System and peripheral software maintenance such as, Open Windows, password files, etc., is the responsibility of the system administrative staff of the WAGIS system. The system administrative staff responsibilities also encompass any changes made to the workstation name, directories where relevant software is kept, etc. When this is done, it is imperative that the system administrator effectively makes changes such that the effect of such changes are carefully implemented to cause no disruption to the operation of the Vtrak system.

Vtrak software maintenance encompasses IXI OSF/Motif, Ingres and installation of new versions of Vtrak software and correction of software bugs and problems encountered with Vtrak software during normal operations. This maintenance, as well as maintenance of mapstation console, is performed in accordance

with a maintenance agreement between DWAF and the supplier, Decca Contractors. When a new version of software is installed, the supplier representative performs the upgrade and completes a "Vtrak Upgrade" form. the form records the relevant information and any problems encountered, after which it is signed by the supplier representative and Head of Image Capture, before being filed in the "Vtrak Maintenance & Upgrade" file. Corrective maintenance is performed by the supplier on a call-out basis. The call-out is registered in the log book on a corrective maintenance log sheet, which is used to record all the particulars of the call-out and the actions taken by the supplier to correct the problem. The log sheet is signed by the supplier and Image Capture Section representative. The log book is maintained in the "Vtrak" Maintenance & Upgrade" file. When Ingres database problems are encountered, it should be dealt with in the same manner as a normal call-out, although Polygon Systems can be directly contacted to avoid delays; should further action be required, then Decca Contractors can be contacted.

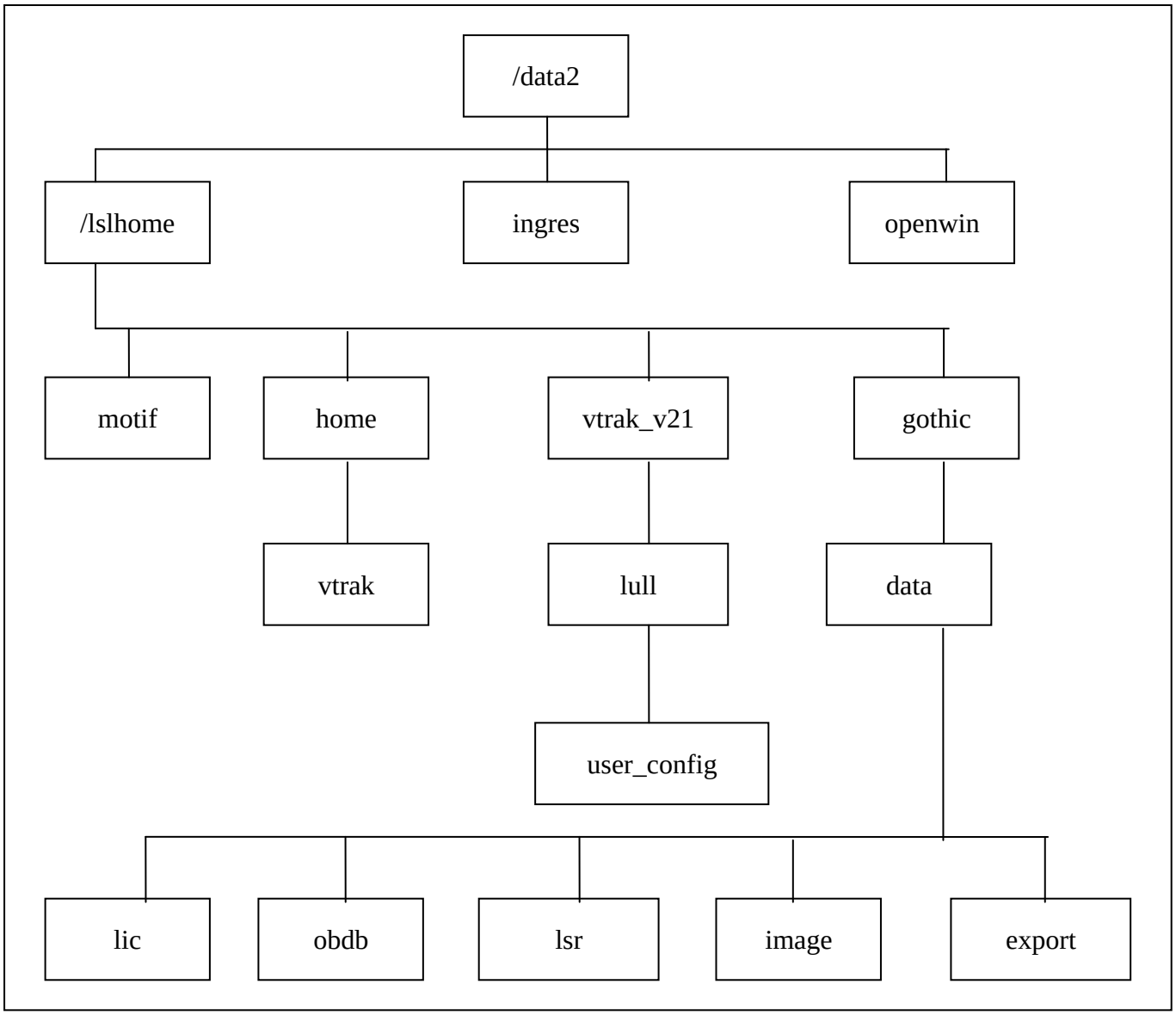
Routine data maintenance is performed by the Head of Image Capture or Vtrak operator under guidance of the Head of Image Capture. Raster and vector datasets as well as import and export data files, that are no longer required in the Vtrak system are deleted on a regular basis to avoid bad data management. The data tidying up procedures are performed by evaluating files and datasets on the system, whereafter data is archived and obsolete data is deleted. Software performance should be continually monitored and performance problems should be reported to the system administrator whereafter reaction to reported performance problems should be monitored.

7. ORGANIZATION OF THE VTRAK SYSTEM DIRECTORIES AND FILES

The Department functions with two interactive Vtrak systems, each of which operates as standalone on a Sun Sparc 2 workstation which opetates within a SunOS environment. The Vtrak directory structure is the same for each system. One System is on the workstation known as "wat1wa109" and the other workstation is "wat1wa112".

It is essential that strict control is kept of the Vtrak system and that the sun workstation disk is mainly used for the Vtrak system and associated purposes, since the system works with large valumes of data and requires large system resources during operation. Uncontrolled use of the workstation and disk space may cause unnecessarily slow operation of the Vtrak system and degrades use of the system resources.

The Vtrak directory structure is installed on each workstation in directory /data2.



The directories of the Vtrak system are listed below, where directories marked with * should not be altered in any way since they are fundamental to the operation of the Vtrak system:

/data2
directory under root directory, where Vtrak system is installed.

/data2/openwin *
parent directory Open Windows software required for Motif startup.

/data2/ingres *
patent directory for Ingres database.

/data2/IsIhome *
patent directory for Vtrak system.

/data2/IsIhome/motif *
OSF/Motif Window Manager software.

/data2/IsIhome/home *
parent directory for Vtrak users.

/data2/IsIhome/home/vtrak
user login files, log files, etc., for user 'vtrak'.

/data2/IsIhome/vtrak_v21 *
Vtrak system executable files and software.

/data2/IsIhome/vtrak_21/lull *
Vtrak system executable files and software.

/data2/IsIhome/vtrak_v21/lull/user_config
User defined startup files for Vtrak system.

/data2/IsIhome/gothic *
parent directory for management aspects of Vtrak system.

/data2/IsIhome/gothic/data *
parent directory for data management.

/data2/IsIhome/gothic/data/lic *
licence files for Vtrak software.

/data2/IsIhome/gothic/data/obdb *
gothic database structures.

/data2/IsIhome/gothic/data/lsr
Vtrak structure data files.

/data2/IsIhome/gothic/data/image
raster data files for Vtrak import purposes.

/data2/IsIhome/gothic/data/export
vector data files from Vtrak export facility.

8. VTRAK WORKSTATION OPERATION

8.1. VTRAK LOGIN

The Vtrak system is started by the user logging on at the relevant Vtrak workstation as the user "vtrak", whereafter the windowing software is commenced.

The operator chooses the required Vtrak option in the manner discussed in the Vtrak User Guide.

For ease of use, a number of aliases have been included in the "Vtrak"

cdimage	cd /IsIhome/gothic/data/image changes directory to the directory for raster data files for import to Vtrak system.
IsIimage	Is –la /IsIhome/gothic/data/image/ I more lists all files in the directory which contains raster data files for import to Vtrak system.
cdexport	cd /IsIhome/gothic/data/export changes directory to the directory which contains all vector data files for import to Vtrak system.

Isexport	Is –la /IsIhome/gothic/data/export I more lists all files in the directory which contains vector data files exported from Vtrak system.
cdlsr	cd /IsIhome/gothic/data/Isr changes directory to the directory which contains the raster structured *.hdr, *.dat and *.ind files.
IsIsr	Is –la /IsIhome/gothic/data/Isr I more lists all the files in the directory which contains the raster structured *.hdr, *.dat and *.ind files.

Each workstation is connected to the WAGIS system using NFS network facilities. Remote file systems have been set up on the WAGIS system by the system administrator, such that the file system is automatically mounted when it is addressed. This facilitates use of file systems when exported vector data is transferred to remote file systems.

8.2. INGRES DATABASE

When the workstation is booted, one of the boot up functions is to startup the Ingres database for operation of the Vtrak system. A user 'ingres' is registered with the home directory being the home directory of the Ingres database.

If for some unforeseen reason, when starting a Vtrak session the message "cannot connect to relational database" is displayed, it implies that the Ingres database has not been started.

The following set of procedures can be done to start the Ingres database.

Login as the 'ingres' user from the login prompt

login: ingres<>

or when in a Vtrak system window, the following can be entered to switch to the 'ingres' user

su ingres<>

After logging in, the database is started by entering

iistartup<>

After the database has set up its environment and been correctly started, exit from the 'ingres' user

exit<>

9. INTRODUCTION TO VTRAK

Vtrak is a data capture system for capturing scanned map features into an intelligent vector format.

With Vtrak the digital raster information can be converted into digital vector form for entry into a map production system or a Geographic Information System.

9.1. FUNCTIONS OF VTRAK

Vtrak can perform the following functions:

- work with map data from digital scanners in a variety of formats
- structure data for rapid image manipulation and variable resolution display

- tune Vtrak to capture different types of map features
- interactively capture and code features such as contours, fences of property boundaries, buildings, dashed lines, cased roads, edges of filled areas, symbols and junctions in the map
- automatically capture and code certain features
- edit captured vector data and correct any mistakes as soon as they occur
- perform a variety of other editing tasks on entire objects or individual data points.

With new releases of Vtrak, new and upgraded functions become available. The release notes supplied with each upgrade should be carefully studied to incorporate new or improved flow of functioning of the Vtrak process.

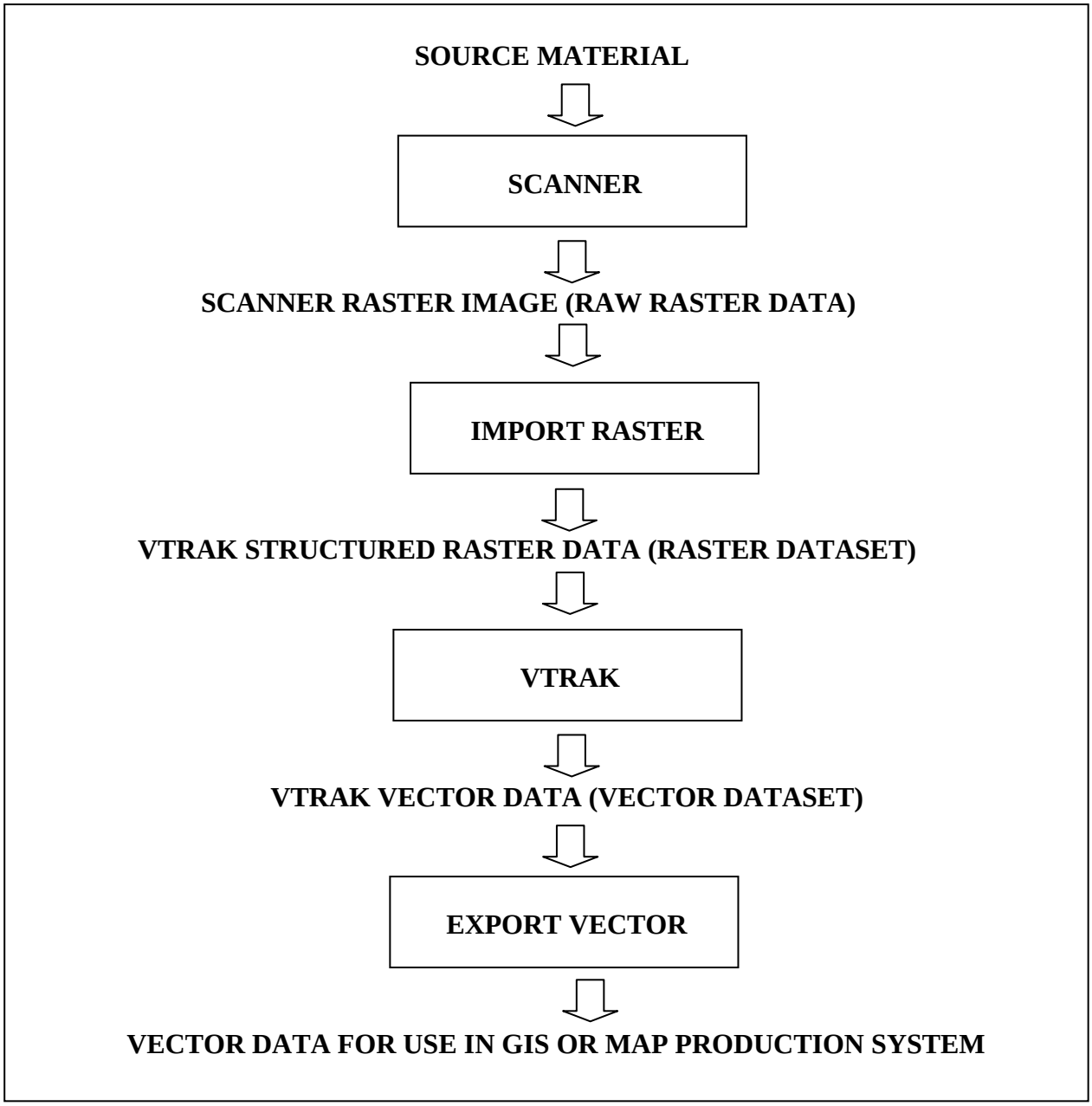
9.2. THE VTRAK ENVIRONMENT

The department's Vtrak system is installed on a Sun workstation employing the Unix operating system, which is connected via ethernet using NFS technology to a network running the Arc/Info GIS application with its peripherals. Vtrak operates independently under the OSF/Motif windowing system and data is maintained in an Ingres database.

A mapstation console with trackerball is installed as additional hardware to facilitate operation of the Vtrak system. The mapstation console is the means to move the cursor around the screen and to move the cursor around the screen and to select Vtrak tasks.

9.3. THE VTRAK FLOWLINE

The Vtrak flowline illustrates the typical set of tasks and the order in which to perform them. when converting a map or drawing from source material to digital vector form.



A brief description of each step is given and the appropriate chapter of the Vtrak User Guide can be referenced for detailed information.

9.3.1. Scan source document

A scanner is used to convert maps and line drawings held on film or paper into raster format. Vtrak can accept scanned data in a variety of raster formats, namely, binary, greyscale and colour.

For import purposes, Vtrak requires the raster scanned data to be in the directory /IsIhome/gothic/data/image. The operator should ensure that the data is present in the correct directory by entering the following at a Vtrak window prompt

Isimage<>

The files present in /IsIhome/gothic/data/image are listed.

9.3.2. Import & structure scanned image into vtrak

The raster data may come from a variety of scanners. The raster import licences acquired are Scitex format, TIFF header, Scan_Graphics and LSLI format.

In order to speed up Vtrak's access to scanned data, the imported data must be reorganised with information relating to orientation, thresholds and the resolution of the map in different zoom views.

This structuring process gives the facility to change the orientation of the data and to eliminate background noise found in some source documents.

Structured data is held in internal Vtrak raster format in the database: and it is this dataset which is used to perform line following.

9.3.3. Tune line following parameters

This step may not be required during a Vtrak flowline if acceptable parameter sets are available. The system is installed with parameter sets which are part of the Vtrak startup files or the Head of Image Capture creates startup files or parameter sets where necessary.

Vtrak can follow a variety of line types. In order to capture a particular type of line quickly and accurately, the parameter set associated with an object class must be set up with the correct parameters for that line type, eg. characteristic line widths and angularity.

There are two levels of parameter tuning, namely, system and user. System parameter tuning is carried out by the Head of Image Capture and is available at startup of Vtrak, and user parameter tuning can, if required, be done during a line following session to fine tune certain parameters for a particular map.

The Head of Image Capture compiles startup files in the directory /IsIhome/vtrak_21/lull/user_config.

The following is a useful way in which to compile a new startup file.

Change to the user defined startup files directory

cd /IsIhome/vtrak_21/lull/user_config<>

List the startup files in this directory

Is –la<>

Choose a suitable startup file to copy, eg. vtrak_user.lull, then copy this file to create the new starup file, eg. p03593.lull

cp vtrak_user.lull p03593.lull<>

Edit this startup file to contain the new requirements

vi p03593.lull<>

This startup file will be available for choice from the list of startup files when initiating a Vtrak session.

9.3.4. Perform interactive line following

Line following is fully interactive and it is the term used to describe the vector capture of a feature from its raster image.

A line following session is initiated by choosing the :VTRAK" option.

The type of feature to capture is chosen from a menu which contains the object names of the selected startup file. The actual feature to capture is selected on the map and line following is activated. In this way, the feature is captured into vector format in the database.

The process semi-automatic: the feature to capture is activated and the operator can intervene to change direction if required, or to provide assistance when digitising a complex area of the map.

The whole raster image or sections of the image can be selected to perform automatic capture of features; these functions are known as autopass and semi-pass.

9.3.5. Perform interactive editing of vector data

Captured data is held in vector format for manipulation and editing.

An object can be edited at any time during a line following session. A variety of editing tasks can be performed on individual data points or on an entire object.

9.3.6. Export captured vector data

The captured vector data in the Vtrak internal vector dataset may be exported into a variety of vector formats for use by other applications requiring vector data. The vector export licences acquired are Arc/Info format, DXF, SIF and Text IFF format.

The vector format is exported by choosing the "EXPORT" or "TRANSLATE" option. The "TRANSLATE" option was released with Vtrak version 2.1. The "EXPORT" option will be phased out with later releases of Vtrak, so Vtrak user's are encouraged to user "TRANSLATE". The "EXPORT" option is presently used, but the "TRANSLATE" option is being phased in. The "EXPORT" option has problems with export of tics to Arc/Info, so some post-process editing is done on the Arc/Info coverages created from EXPORT> This editing is discussed in section 10.3, but will not be required once TRANSLATE is fully implemented.

10. GENERAL HINTS

10.1. IMPORT RASTER

At present, the only LSLI format supported by the Vtrak system is uncompressed LSLI format.. Since the uncompressed format is often much larger that the compressed format, the time taken to transfer the larger file larger file from the scanner PC to the Vtrak system is excessively long. Instead of transferring the larger file, it is feasible to transfer the smaller ".scd" file and thereafter to create the larger uncompressed version on the Sun workstation by using the "scd2bin" software.

This is achieved when logged in as the "vtrak"user.

Change to the directory /IsIhome/gothic/data/image where the .scd file has been placed, and where the resultant uncompressed file will be placed

cdimage<>

Confirm the directory as /IsIhome/gothic/data/image

pwd<>

Confirm that the required .scd file is present

Isimage<>

Now start the uncompression software

scd2bin<>

Enter the input file name, including extension of .scd, which requires conversion

filename.scd<>

Enter the output file name, by changing the extension to .bin

filename.bin<>

Enter the colour to extract, namely black, which is normally colour 2 of scanning colour table

2<>

then to start conversion

999<>

Once this file has been converted, check that the .bin file exists

Isimage<>

To have good housekeeping, delete the compressed .scd file

rm filename.scd<>

The filename.bin is the file selected to import to Vtrak during the "Import Raster" option.

10.2. CONTROL POINT REGISTRATION

It is essential to capture control points for every document vectorised. This is the means by which the vector data can be positioned on real-world coordinates. The control points, or tics as called in Arc/Info, must be clearly marked on each source document prior to scanning. The user must be able to identify the coordinates of each marked control point.

Taken from experience, the procedure adapted for Vtrak vectorisation is to capture the marked control point without entering the coordinate values. The data is therefore captured in Vtrak in scanner units. When the data becomes available in the requested vector format, the data can be transformed to the required coordinate system. It has been found that less operator and user introduced errors have occurred with this approach.

The first time a Vtak session is started with a raster dataset and new vector dataset, Vtak prompts with the question whether the operator wishes to "Measure Control Points?"; the choice entered should be "Cancel". However, it is essential that the marked tics are correctly capture at this initial stage.

The operator chooses the type of feature to capture, namely "control point". The centre of each identified tic is the point which must be captured as the feature "control point". Tic id numbers are not given in Vtrak.

It is good practice to capture all the marked tics, then to choose the "Save" option, whereafter the line following session can be continued.

10.3. ARC/INFO EXPORT POST-PROCESSEDITING

Once all the features of a raster dataset have been captured, the vector dataset is exported to the vector format requested by the user.

The vector format is exported by choosing the "EXPORT" or "TRANSLATE" option. The "TRANSLATE" option was released with Vtrak verion 2.1. The "EXPORT" option will be phased out with later releases of Vtrak, so Vtrak user's are encouraged to use "TRANSLATE". The "EXPORT" option is presently used, but the "TRANSLATE" option is being phased in.

The "EXPORT" option has problems with export of tics to Arc/Info, so some post-process editing is done on the Arc/Info coverages created from EXPORT.

The editing is discussed in this section, but will not be required once TRANSLATE is fully implemented.

This discussion is restricted to data obtained form the "EXPORT VECTOR" option being used to create Arc/Info vector coverages.

An example will be used of a Vtrak vector dataset named "file_V", for which the captured featured are "control_point", "blue_line" and "red_line", which is required for project p03593.

The "EXPORT VECTOR" option places the vector format files in the directory /IsIhome/gothic/data/export.

Check that the files have been exported by changing to the correct directory

cdexport<>

List the files

Isexport<>

The files file_vcontrol_point, file_vblue_line and file_line should be present.

The files must be copied to the project workspace eg. /db/p03593/raw, with a change to a shorter name and the extension .e00.

The following commands can be used to copy the files, changing the name at the same time

cp file_vcontrol_point /db/p03593/raw/filevcp.e00<>

cp file_vblue_line /db/p03593/raw/filevb.e00<>

cp file_vred_line /db/p03593/raw/filevr.e00

Exit from Vtrak.

The data is imported to Arc/Info by logging onto the system as an Arc/Info user, and changing directory to the project workspace

cd/db/p03593/raw<>

Arc/Info is initiated

arc<>

Import the files into Arc/Info in the following way to create coverages "filevb", "filevr" and "filevcp"

import auto filevb filevb<>

import auto filevr filevr<>

Arc will bomb out for the next command, but continue, merely start arc again after it has bombed out

import auto filevcp filevcp<>

The tics from the "cp" coverage must be transferred to the corresponding coverages, using "arc"

arc<>
build filevcp point<>

Start Arcedit and set up the display environment
ae<>
display 9999 3<>

Edit coverage filevcp to create tics

ec filevcp<>
de all<>
draw<>

The exact coordinates of the labels must be obtained for the tics to be added

ef lables<>
sel many<>

select each and record the coordinates

x1, y1 x2, y2 x3, y3 x4, y4

Add the tics by typing in the coordinates as obtained from the labels, substituting x1, y1, etc. by the actual coordinate values

ef tics<>
coord keyboard<>
add<>
1, x1, y1<>
add<>
1, x2, y2<>
add<>
1, x3, y3<>
add<>
1, x4, y4<>
9<>

Once the tics have been added, the correct tic id numbers must be assigned as obtained from the marked tics on the source documents.

ef tics<>
coord cursor<>

Repeat the following 2 commands for all tic ids, where y is the relevant tic id number on the source document

sel<>
calc $id = y<>

Now delete the labels.

ef labels<>
sel all<>

delete<>

Save the coverage filevcp.

save<>

Now the created tics can be transferred to the coverages which require the tics.

Start Arcedit and set up the display environment

ae<>
display 9999 3<>

Edit coverage filevb to create tics, with the tic coverage filevcp as baccoverage

ec filevb<>
bc filevcp<>
de all<>
be all<>
draw<>

The arbitrary tics created for the coverage filevb during import, must initially be deleted

ef tics<>
sel all<>
delete<>

The tics, with correct tic id numbers, are copied from the back coverage

ef tics<>
get filevcp<>

The coverage with tics is saved.

save<>

The process is repeated to copy the tics with correct tic id numbers to each required coverage.

10.4. HINTS WHEN VTRAK SESSION HANGS

When the unfortunate happens and the Vtrak session hangs and you cannot get cursor control to tidily save and exit, then perform the following untidy procedure.

Find out the process number which is causing the problem

ps –aux 1 grep vtrak<>

which should display a list of processes. The culprit process is probably a process name for user ‘vtrak’ of the form /IsIhome/vtrak_v21/exe//…. Take note of the process number.

Kill the process, where for example, the process number is 1137, but replace 1137 with the correct number

kill 1137<>

All the windows should close. Now the relevant vector dataset in the database remains locked and has to be closed before the dataset cant be used again.

At the Vtrak window prompt enter

db_browse<>

which displays a window with the datasets in the database. Scroll until the relevant dataset name is found. It should show this dataset as a vector datset and in the mode of ex-update. If it is shown as a base (root) dataset, then you cannot presently recover and you would have to start the Vtrak session with a different vector dataset name. The vector dataset is recovered by

highlighting the relevant dataset

and using

Promote

to place it in the window. Proceed by selecting

Dataset

and clicking on

Recover

after which the dataset should be shown as unlocked and unfrozen. Exit from the browse utility be selecting

Database

and clicking on

Detach and exit

The Vtrak session can be started again with the same dataset names.

11. VTRAK INSTALLATION HINTS

11.1. SYSTEM ADMINISTRATION PREREQUISITES

The "Installation Guide" supplied with each Vtrak upgrade contains the prerequisites for the installation. A few of these will be discussed here.

SunOS including OpenWindows is a requirement. It has been found that it is not successful to operate the Vtrak system with OpenWindows on a remote file system. OpenWindows should preferably by placed on the Vtrak workstation and preferably in the directory /data2/openwin.. When an upgrade is done, ensure that the home directory for OpenWindows is correctly set up.

The database in use, namely Ingres, is required. The preferable directory that Ingres should be placed in is /data2/ingres. The setup should be that the Ingres database is started when the Vtrak workstation is booted. A user 'ingres' should be available on the Vtrak workstation with the home directory being /data2/ingres for correct login procedures to occur.

IXI OSF/Motif is a requirement. The preferable directory where Motif should be placed is in /data2/motif.

The OpenWindows, Ingres, and Motif installation was done at initial instalation of the Vtrak system on each workstation, and should therefore not be required to do when an upgrade is performed. However, when an upgrade is done, ensure that the prerequisites are present as expected.

The "Installation Guide" stipulates what swap space size and Ingres database minimum size should be available, as well as what user names are required. Some of the warning signs that the swap space size is not sufficient is if messages or other small windows do not display properly or only flash on the screen for a short while. The system administrator should check that the swap space

fulfils the Vtrak prerequisites. The relevant user names, eg ‘vtrak’ and ‘ingres’, should be present in the password file with the correct home directory.

11.2. INSTALLATION OF MOTIF WINDOW MANAGER

If the IXI OSF/Motif Window Manager needs to be installed, then the following applies

- About 20 mbytes free space for files, etc. is required to install Motif.
- The Motif software will be installed under the current directory, so change to the correct directory.
- Load the Window Manager distribution kit tape on relevant tape drive.
- Read tape on system: tar –txf device_name<>
- This creates a directory structure .motif/… under the current directory. change to this directory: cd motif<>
- Install software with command: INSTALL<>
- Answer relevant questions.
- End installation: exit<>
- Remove tape from tape drive.

11.3. VTRAK VERSION UPGRADE

When an upgrade to the Vtak software is obtained, it is always accompanied by an “Installation Guide”. Ensure that all the prerequisites are met before the installation is commenced.

The installation highlights what default directories are assumed for functioning of the Vtrak system. If these defaults are not the same as on the present installation, then the relevant changes must be made during the upgrade to ensure correct functioning of the system. One of the aspects to be cheched is the name of the installation in the .cshrc file in the ~vtrak directory. the “wat1wa109” installation is known as “DECCA4_SPARC_1” and the “wat1wa112” installation is known as “DECCA4_SPARC_2”. Another very important aspect is to ensure that the correct path is set for OPENWINHOME. The default is normally /usr/openwin, but both installations have the OpenWindows software present in /data2/openwin so that the Vtrak system is operated independently. Another aspect is to include the precious version login requirements, such as extended aliases.

The “Maintenance & Upgrade” file contains the records of previous upgrades and problems, if any, with solutions which may have occurred during the upgrade. When an upgrade is done, then an “Upgrade” form should be completed and filed in the “Vtrak Maintenance & Upgrade” file.

12. OUTPUT

Data is output in a number of ways, depending on the user’s requirements.

Data has been successfully output onto various magnetic media, such as

- transfer the data across the network to various directories
- write data onto exabyte tapes connected to Sun server after transferring data across network to temporary directory
- write data onto cartridge tape connected to Sun server or network workstation after transferring data across network to temporary directory
- send data across the network to the Prime system to be placed on ½” reel tape

12.1. TRANSFER DATA ACROSS NETWORK TO VARIOUS DIRECTORIES

Data can be transferred to a directory across the network in two different ways. One method is to use the Unix command to copy a file and the other method is to use the ftp system. Whichever method is used, requires that the user has write access to the target directory.

If the target directory is mounted on the source workstation, then the file can be copied with a Unix command. For example, if logged on to the workstation which has the file, filename.abc in the source directory /IsIhome/gothic/data/export and it is to be copied to the directory /db/p03593/work which is mounted on the workstation, then the following steps can be followed.

Change directory to the source directory

cd/IsIhome/gothic/data/export<>

Ensure that the source file, filename.abc, is in the directory

Is –la<>

Copy the file to the mounted target directory

cp filename.abc /db/p03593/work<>

Ensure that the file has been copied with the command

Is –la /db/p03593/work<>

The file transfer system, ftp, can be initiated to any server or workstation on the network. This is done in the following way, using wat1sa253 as an example

ftp wat1sa253<>

The prompt “login:” is displayed for the user name to log in to the particular server or workstation. the login name must be known to the server or workstation and the directory to which data will be sent must have write access for the login user name.

The login name is entered, using “user” as an example

user<>

whereafter the user password is entered at the “password:” prompt.

After logging in, the ftp facilities can be used.

The user must change directory to the target directory where the data is to be placed. This is done in the following way, using db/p07892/raw as an example

cd/db/p07892/raw<>

Ensure that the correct path name is entered, taking particular care that upper and lower case letters are correctly used.

The user can confirm that the correct directory has been chosen, by entering

pwd<>

and a list of files presently in the target directory can be obtained by entering

dir<>

Prior to commencing transfer of data, the transfer mode must be set to transfer the files as binary files

bin<>

The file transfer process is started by the following command, where the filename is the full name of the file, including its extension, if any

put filename<>

If more files are to be transferred, the previous command is repeated for each file to be transferred. If wished, the operator can check whether file transfer has been successful by

dir<>

which lists all the files in the target directory.

The file transfer process is terminated by

quit<> or **bye<>**

The PC-NFS manual can be referenced for discussion of "ftp" functions in detail.

12.2. WRITE DATA ONTO TAPE CONNECTED TO SUN SERVER OR WORKSTATION ON NFS NETWORK

When data has been transferred to a workspace accessible on the NFS network, the data can be written to magnetic tape when logged on to the appropriate server or workstation. The data is written as a Unix tar tape set. The method of use of the exabyte tape and cartridge tape are the same. The difference is the tape drive and the size of the tapes used in the tape drive.

To write data to an exabyte or cartridge tape, the tape must be inserted in the relevant tape drive. The name of the tape drive must be known for any operations to be executed, for example /dev/rst0. The name can be obtained from the system administrator.

Log on to the server or workstation onto which the tape drive is connected, either using telnet or any appropriate way. By using the example of tape name /dev/rst0, ensure that the tape is at the beginning of tape by rewinding with the command

mt –f/dev/rst0<>

The tar command is used to write a tar tape set on the tape. The syntax for the tar command can be obtained by typing

man tar<>

at the prompt, after which the information will be displayed.

Change directory to the source directory to obtain the data files which are to be placed on tape. This is done in the following way, using db1/p07892/raw as an example

cd/db1/p07892/raw<>

Ensure that the correct path name is entered, taking particular care that upper and lower case letters are correctly used.

If wished, confirm that the correct directory has been chosen, by entering

pwd<>

and a list of files presently in the source directory can be obtained by entering

Is –la<>

Thereafter the data files can be transferred to the tape as a tar tape set. By using the example if writing the files f0.tif, f1.tif, f1.scd, f1.pal to a tar file, the tar command would typically be

tar –cvf/dev/rst0 fo.tif,f1.tif,f1.scd,f1.pal<>

If the user wishes to perform operations on the tape without a rewind at the end of the operation, then the tape device is addressed as /dev/nrst0 instead of /dev/rst0.

It is good practice to check that the relevant files have been written to tpe, by typically using the tar command

tar –tvf/dev/rst0<>

12.3. WRITE DATA ONTO ½" REEL TAPE ON PRIME SYSTEM

Presently, this is not a recommended way of supplying data to users. The reason is that it is cumbersome and too many factors may have to be considered to successfully satisfy the user's requirements. Should a greater need emerge to supply data on this medium, then the Head of Image Capture should negotiate a more suitable solution with the system administrator.

However, if the only alternative is to supply data to a user on this medium, then the system administrator should be consulted for assistance, since there are too many alternatives to be discussed for a need which hardly ever arises.

13. COMMUNICATION WIHT NETWORK SERVER OR WORKSTATIONS

The operator can connect to the WAGIS system servers or workstations. This facility is offered by the NFS file system in use on the WAGIS system.

To log on to a server, say wat1sa253, the following is entered at the prompt

tenet wat1sa253<>

after which the operator is prompted for a login name and password

login:
password:

The operator enters the login name and password, after which the relevant login file will be executed for a valid login. The operator can perform the operations on the server or workstation.

Any valid server or workstation name can be used instead of the wat1sa253 example above. If the actual name is not known, then the port address can be substituted for the name.

The file transfer system, ftp, can be initiated to any server or workstation on the network. This is done in the following way, using wa1sa253 as an example

ftp wat1sa253<>

after which the login name and password are required. The user login name must be entered, whereafter the associated password is entered. After logging in, the ftp facilities can be used.

The file transfer process is terminated by

quit<> or **bye<>**

The PC-NFS manual can be referenced for discussion of ftp functions in detail.

14. GENERAL TIDYING UP PROCEDURES

To avoid the Vtrak system being cluttered with unnecessary files and datasets, the directories and database should be maintained regularly so that the minimum of data is kept. Files and datasets that are no longer required on the system should be deleted or archived, as relevant, on a regular basis.

Files in the directories /IsIhome/gothic/data/image, /IsIhome/gothic/data/export and /IsIhome/gothic/data/Isr should regularly be monitored.

Once the raster image has been imported to the Vtrak system, the raster data file in /IsIhome/gothic/data/image can be removed if not required for other purposes.

Once data has been successfully exported form Vtrak and transferred to the project workspace, then the relevant vector files can be removed from /IsIhome/gothic/data/export.

When data has been successfully exported form Vtrak and transferred to the project workspace, then the relevant raster and vector datasets in the database can be deleted.

This is achieved by logging on as the 'vtrak' user and choosing the VTRAK option. When the window to choose raster and vector datasets is displayed, select to display either raster or vector datasets, depending on which type of dataset is to be deleted.

A window is diplayed which lists all the particular datasets in the database. Scroll until the relevant dataset name to delete is found. The dataset is deleted by

highlighting the relevant datset

and using

Promote

to place it in the active window. Proceed by selecting

Facilities

and clicking on

Delete

after which the dataset is deleted from the database. This procedure can be repeated for each dataset to be deleted. When all required datasets have been deleted, exit form this window by selecting

Cancel

When all relevant datasets have been deleted, exit from the VRTAK option by selecting

Cancel

When raster datasets have been deleted form the database, the directory /IsIhome/gothic/data/Isr should be tidied by deleting the associated raster dataset structuring files, namely filename.hdr, filename.dat, filename.ind for each structured view and zone.

15. CONCLUSION

The guidelines and procedures presented in this document are not exhaustive. Innovative ideas should continually be pursued and the procedures and guidelines should be updated and Vtrak upgrades should be incorporated to provide a constantly improving Vtrak vectorisation service.

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