AN OVERVIEW OF THE CATALOG MANAGER

Frederick M. Irani
Science Application Research
4400 Forbes Blvd.
Lanham, Maryland

```
┌─────────────────────────────────────────────────────────┐
│                      AGENDA                             │
│                                                         │
│                                                         │
│   Introduction                                          │
│   Brief History                                         │
│   Requirements                                          │
│   Naming Conventions                                    │
│   Catalog Structure                                     │
│   User Operation of CM                                  │
│   Fortran/C Callable Routines                           │
│   File Attributes                                       │
│   Archive/Retrieve Capabilities                         │
│   LAS User Scenario                                     │
│   Configuration                                         │
│   Performance and Future Enhancements                   │
└─────────────────────────────────────────────────────────┘
```

INTRODUCTION

The Catalog Manager (CM) is being used at the Goddard Space Flight Center
in conjuction with the Land Analysis System (LAS) running under the
Transportable Applications Executive (TAE). CM maintains a catalog of
file names for all users of the LAS system. The catalog provides a
cross-reference between TAE user file names and fully qualified host-file
names. It also maintains information about the content and status of
each file.

BRIEF HISTORY

o Original Design for CM was borrowed from the VISSR Atmospheric
   Sounder (VAS) software in 1981.
   VISSR = VISIBLE INFRARED SPIN SCAN RADIOMETER

   - The VAS software was written by Computer Sciences Corporation for NASA.
   - CM under VAS was used primarily for it's file searching capabilities.
   - The this system met the overall requirements for an LAS Catalog Manager.
   - LAS has used a modified version of this software since 1981.

o Has since undergone several internal design changes and enhancments.
o It has been rewritten in several times in FORTRAN.
o Has been maintained by the Century Corporation recently.
o It is now written entirely in C.
o Has been ported to run under the UNIX operating system as well as VAX/VMS.

An Overview of the Catalog Manager

USER

TRANSPORTABLE
APPLICATIONS
EXECUTIVE

224 LAND
ANALYSIS SYSTEM
FUNCTIONS

26 CATALOG
MANAGER
FUNCTIONS

49 FORTRAN/C
CALLABLE
ROUTINES →

CATALOG
MANAGER

CATALOG . . . X Ref. TAE/HOST File Names + File Info
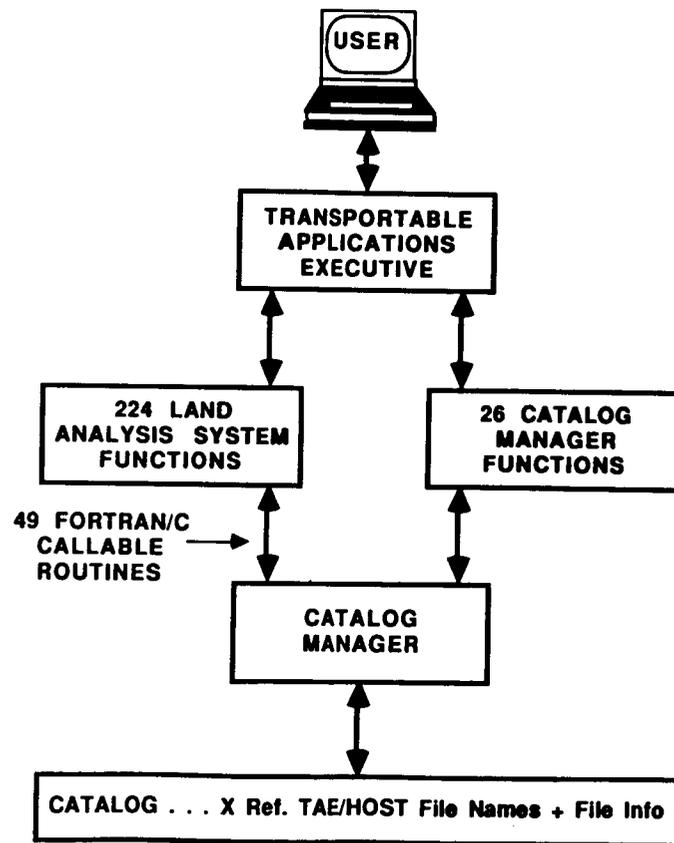
REQUIREMENTS

o CM is designed to provide:

  o A standard naming convention across operating systems.

    - This is done as a complement to the user friendliness provided by TAE
      in LAS.

    - LAS users will be familiar with the naming convention regardless
      of the operating system of the host computer.

  o Storage of file attributes is provided.

    - The catalog stores information about each file such as the file type.
      That is, whether the file is an image, statistics file, look-up-table
      or some other type of file.

    - There are many attributes which may be stored for a file. These
      will be discussed later.

  o Associations between files.

    - Each catalog entry may contain a list of other file names which are
      closely associated with that entry.

    - For example, a CLASSIFIED image name may have an associated file list.
      This list may include the names of the raw image and statistics files
      that were used to create it.

  o Ease of organizing and searching for files.

    - The structure of the naming convention and maintenence of file
      attributes allows users to manage their files efficiently.

  o Recently, Archive and Retrieve capabilities have been added to CM.

    - Functions have been added to be used at the programmer, user
      and system manager level to handle off-line files.

    - This feature will be discussed in greater detail.

Requirements

- **Standard naming convention across operating systems**

- **Storage of file attributes**

- **Associations between files**

- **Ease of organizing and searching for files**

- **Archive/Retrieve capabilities**

---

o NAMING CONVENTIONS

o The "TAE" name

  - The actual contents of each file created in LAS resides in the
     user's default directory of the host computer.

  - The name of this file is determined by LAS functions at the
     time it is created. This is called a host-file name.

  - The LAS user never refers to host-file names however. Instead
     they use TAE names which follow the naming convention prescribed by
     catalog manager.

  - The catalog then provides the cross-reference between the host-file
     and the TAE name.

  - Host-files are automatically "cataloged" along with a TAE name
     by LAS functions. CM functions exist, however, to catalog
     a host-file with a TAE name without using LAS functions.

  Structure:

    o Root
      - The Top Root consists of the User's log in name.
      - Therefore, a top root name is required only to refer to
         another user's files.

    o Directory Qualifiers

      - One to 20 qulifiers of up to 8 characters.
      - maximum file name length of 100 characters.

    o File Version (Represents the leaves/endpoints of the catalog tree.)
      - Separated from directory name by a semicolon.
      - Up to 99 versions of a file are permitted.
      - "L" for Latest or "B" for Best version are permitted.

  Wildcard Characters

    - CM accepts an asterisk as a "wildcard" qualifier value.

    - The wildcard allows users to specify several files without
      explicitly naming each.

    - CM will process files which match all characters in a given
      file name regardless of the characters which occupy the position
      of a wild card.

    - Only one wildcard is permitted per directory qualifier.

  Default Root:

    - Users often have files with several identical leading qualifiers.

    - For convience the default root may be extended to include a desired
      directory name.

    - This default root is temporary. It will exist only for the length
      of a single TAE session.

Alias Names:

- Used as a convienience to name files which are used frequently.

- Are permanently maintained in the catalog untill deleted.

CATALOG STRUCTURE

o The Catalog contains file names and associated information about the file only.

o Tree Structured Catalog

- User Roots (Catalog sub-tree) - point to directories.

- Directory/Branch names (nodes of tree) - point to file versions.

- File versions (leaves) - point to attributes and alias names.

- The tree structure of the catalog is strongly reflected by the naming convention used under TAE.

Naming Convention

STRUCTURE

ROOT. QUAL 1. QUAL 2... QUAL N; VERSION

WILDCARDS

HARRIS. *. IMAGE*. = #HARRIS.STUDY1.IMAGE1
                        #HARRIS.STUDY3.IMAGES

DEFAULT ROOT

CMSET-ROOT   #HARRIS. STUDY 2
STATISTICS = #HARRIS.STUDY2.STATISTICS

ALIAS NAMES   (2 ROOTS)

CMALIAS-CREATE $ JANUARY   STUDY 2. STATISTICS
                           $ FEBURARY   STUDY 1. IMAGE. STATISTICS

Tree Structure Catalog

 # HARRIS . STUDY 1. IMAGE ;1

ROOT

DIRECTORY

FILE NAME

 # HARRIS . STUDY 2. STATISTICS. WINDOW 2 ;1

ROOT

DIRECTORY

FILE NAME

```
                    CATALOG
        ROOT          ROOT          ROOT

        DIRECTORY                DIRECTORY

FILE NAME; 1 ... FILE NAME; n     FILE NAME; 1 ... FILE NAME; n

  ALIAS; 1    ...   ALIAS; n        ALIAS; 1    ...   ALIAS; n

ATTRIBUTES ... ATTRIBUTES        ATTRIBUTES ... ATTRIBUTES

ASSOCIATED ... ASSOCIATED        ASSOCIATED ... ASSOCIATED
FILE LIST      FILE LIST         FILE LIST      FILE LIST
```
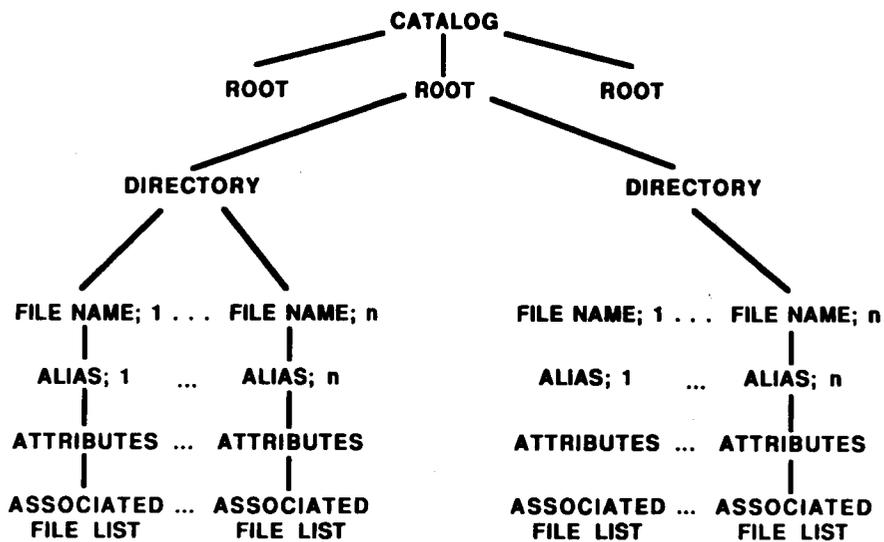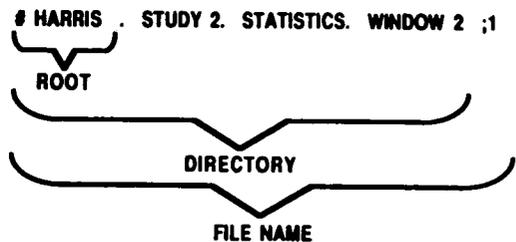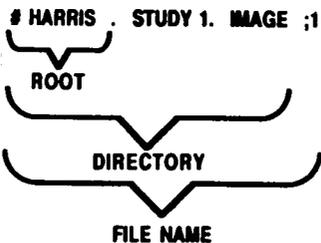
USER OPERATION OF CM

o Users may run CM directly from a TAE command line or tutor screen.

o CM functions are available to handle

- File Naming

- Cataloging/Uncataloging Host-files

- Obtaining Host-files Name from TAE Name and Reverse

- Editing file attributes and Associating file names

- Searching the catalog by name and or attribute

- General operations: such as Setting default directories

- Archive / Retrieve capabilities

133

Catalog Manager User Operations

- CMALIAS-CREATE - Assign an alias.
- CMALIAS-DELETE - Deassign an alias from a directory name.
- CMALIAS-LIST   - List aliases.
- CMALIAS-RENAME - Change an alias.
- CMARCH   - Catalog files to tape.
- CMCAT   - Catalog a host file.
- CMCHGATR   - Change cataloged file attributes.
- CMDEL   - Delete a cataloged file or a host file.
- CMLIST-ATTR   - List attributes.
- CMLIST-DIR   - List file in a directory.
- CMLIST-CONTEXT - List the reopen copntext of a file.
- CMLIST-FILE   - List cataloged files.
- CMLIST-HOST   - List host file names.
- CMLIST-TAPE   - List archived tape information.
- CMOFF   - Terminate a catalog manager session.
- CMON   - Initiate a catalog manager session.
- CMRENAME   - Rename a cataloged file.
- CMSEARCH-ATTR   - Retrieve archived files.
- CMSEARCH-NAME   - Search the catalog by attribute.
- CMSEARCH-NAT   - Search the catalog by name and attribute.
- CMSET   - Set the default directory.
- CMSHOW   - Show the default directory.
- CMTAPE   - Clear tape information.
- CMTAPEDEL   - Delete a tape from the catalog.
- CMUNCAT   - Remove a name from the catalog.
- CMUNDEL   - Undelete tape file(s) that are marked for deletion.

FORTRAN/C CALLABLE ROUTINES

o The same capabilities are provided to programmers by C and FORTRAN
  callable routines. These routines are used in LAS software to:

  - Catalog created host-files.

  - To remove deleted host-files from a catalog.

  - To obtain the associated host-file name for a TAE name.

  - To check file attributes before processing a file.

  - To archive files by CM conventions.

  - and generally to access the catalog to update or obtain file information.

FORTRAN Callable CM Functions

```
 1    XEAOUT   - Output aliases and TAE names.
 2    XEARCH   - Archive files.
 3    XASOC    - Add and associated File to an attribute list.
 4    XECAL    - Catalog and alias.
 5    XECAT    - Catalog a file.
 6    XECMIN   - Initialize user with catalog manager.
 7    XEDEAS   - Delete associated files from an attribute list.
 8    XEDEL    - Delete and uncatalog a file or branch.
 9    XEDEL1   - Delete and uncatalog a single file.
10    XEDEUN   - Delete or uncatalog a single file.
11    XEDFLT   - Set default values.
12    XEHST    - Delete a host file.
13    XEEND    - Terminate communications with catalog manager.
14    XEERR    - Output a TAE Catalog Manager error message.
15    XEFID    - Get file ID of a cataloged file.
16    XEFILE   - Generate a host file name .
17    XEFULL   - Retrieve  a fully qualified TAE name.
18    XEGET    - Retrieve the value of the specified attribute.
19    XEGTAF   - Retrieve associated file list.
20    XEGOUT   - Output alias and TAE names.
21    XEGPID   - Get process ID.
22    XEGTNM   - Get user name.
23    XEHOST   - Retrieve host file name of a cataloged file.
24    XEINIT   - Initialize user with catalog manager'.
25    XEIOP    - Open an image file for input.
26    XEIPOU   - Open an image file for output.
27    XELALS   - List aliases.
28    XELDIR   - Search by directory.
29    XELFIL   - Search by a file or branch name.
20    XELIAS   - Retrieve aliases of a TAE name.
21    XEMATR   - Modify the attributes of a cataloged file.
22    XEOUT    - Output a set of names.
23    XEPRNT   - Print name and/or attributes to terminal,
                 file, or line printer.
24    XERALS   - Rename an alias.
25    XEROOT   - Set default root.
26    XERUIC   - Save user's indentification code.
27    XERETR   - Retrieve archived files.
28    XESATB   - Search by name and attributes.
29    XESATN   - Search by directory name.
30    XESET    - Set attributes of a file.
31    XESGSR   - Search by name and/or attributes; return
                 a single name.
32    XESNAM   - Search by name only.
33    XESRCH   - Search by a file or branch name and/or arrtibutes.
34    XESTAR   - Initialize a stand-alone non-TAE user with
                 the. Catalog Manager.
35    XETNAM   - Get TAE name of an alias .
36    XEUNCAT  - Uncatalog a file.
37    XEUSER   - Get user information.
38    XEVFY    - Verify that a TAE data set exists in the catalog.
```

FILE ATTRIBUTES

o Certain attributes apply to image data explicitly.

o Off-line File Information: Tape Volume, Tape file name, ON/OFF line flags are now being maintained.

o Four User defined attributes exist in the catalog.

  - LAS uses the DATA TYPE2 attribute to store "KEYS". These are used to access image label information from "keyed access" files in LAS.

o CM allows file searching by name, attribute or both.

39 Catalog Manager Attributes

ATTRIBUTE DESCRIPTION	ATTRIBUTE	ATTRIBUTE TYPE	ACCESS
Data date	CMADAT	integer*2 (3)**	read-write
Data time	CMATIM	integer*2 (3)***	read-write
Center latitude	CMACLA	real*8	read-write
Delta latitude	CMADLA	real*8	read-write
Center longitude	CMACLO	real*8	read-write
Delta longitude	CMADLO	real*8	read-write
Data type 1	CMADT1	character*8	read-write
Data type 2	CMADT2	character*8	read-write
User field 1	CMAUS1	character*8	read-write
User field 2	CMAUS2	character*8	read-write
User field 3	CMAUS3	character*8	read-write
User field 4	CMAUS4	character*8	read-write
Version	CMAVER	character*1	read-write
File (F) or directory(C)	CMAFIL	character*1	read-write
Disk volume & serial #	CMAVID	character*12	read-write
Source code	CMASRC	integer	read-write
Instrument code	CMAINS	integer	read-write
Starting line number	CMASLN	integer	read-write
Number of lines	CMANLN	integer	read-write
Line increment	CMALNI	integer	read-write
Starting sample number	CMASSM	integer	read-write
Number of samples	CMANSM	integer	read-write
Sample increment	CMASMI	integer	read-write
Number of bands	CMANBD	integer	read-write
Spectral Organization	CMASPC	character*2	read-write
Project	CMAPRO	character*30	read-write
Host file creation date	CMACRD	integer*2 (3)**	read-write
Host file creation time	CMACRT	integer*2 (3)***	read-write
Last access date	CMALAD	integer*2 (3)**	read-write
Last access time	CMALAT	integer*2 (3)***	read-write
Modification date	CMAMOD	integer*2 (3)**	no access
Modification time	CMAMOT	integer*2 (3)***	no access
Footage	CMAFTG	integer	read only
Tape label	CMATLB	character*6	read only
Name of file on tape	CMATFL	character*19	read only
On-line indicator	CMAONL	logical	read only
On-tape indicator	CMAOFF	logical	read only
Marked for deletion flag	CMAMKD	logical	read only
Host filename w/o device	CMAHST	character*80	no access

** Dates are input as three words (two bytes each). The first word contains the year, the second contains the month, and the third contains the day of the month.

*** Times are input as three words (two bytes each). The first word contains the hour, the second contains the minute, and the third contains the seconds.

Associated File Lists

o Lists of associated files are kept with file attributes

- Each File or directory may have up to 30 other file names kept in its associated file list.

- An associated file can not be deleted untill the file it is associated with is deleted.

- An example of the use of associated files in LAS will be shown.

Associated File List

ASSOCIATED FILE LIST

ASSOCIATED FILES
{
# HARRIS. STUDY 1. IMAGE;1
# HARRIS. STUDY 1. IMAGE. STATS
# HARRIS. STUDY 2. STATISTICS. WINDOW 1
}

= A : MUST BE DELETED TO DELETE FILES B OR C
= B : B & C ARE ASSOCIATED WITH A
= C

ARCHIVE / RETRIEVE CAPABILITIES

o A user may archive or retrieve any cataloged file to or from tape. After the file has been archived it remains cataloged along with it's location on tape.

o The following actions are taken by CMARCH.

- Searches User's Catalog for files meeting the name and attribute combination specified by the user.

- Prompts the user to verify the file names it finds.

- Requests operator to specify a tape drive and mount a tape Volume.

- Checks that the correct tape volume is mounted.

- Assigns tape Volume numbers to new tapes.

- Requests operator for a new tape when requested or needed.

- Requests the operator to mount a new tape if the end of tape if found while writing a file. This tape is handled as a "continuation" tape.

- Writes the file or files from disk to tape.

- Updates file attributes (ON/OFF line, tape volume, tape file name, etc.)

- Deletes the on-line files if requested.

- CMRETR performs an equivalent scenario for retrieving files from tape.

139

Archive and Retrieve Command Lines

```
TAE> CMARCH NAME     = TAE name +
            DELETE   = KEEP or DELETE
            VERIFY   = verify or no verify +
            ERROR    = continue or stop +
            TAPE     = unload or nounload +
            SUPERSED = super or nosuper +
            NEWTAPE  = new or nonew +
            DATE     = date-string +
            PROJECT  = a string +
            INSTR    = a string +
            SOURCE   = a string +
            USER1    = a string +
            USER2    = a string +
            USER3    = a string +
            USER4    = a string +
            CRDATE   = createion-date +
            LADATE   = last-used-date


TAE> CMRETR NAME     = TAE name +
            DELETE   = KEEP or DELETE +
            VERIFY   = verify or no verify +
            ERROR    = continue or stop +
            TAPE     = unload or nounload +
            DATE     = date-string +
            PROJECT  = a string +
            INSTR    = a string +
            SOURCE   = a string +
            USER1    = a string +
            USER2    = a string +
            USER3    = a string +
            USER4    = a string +
            TAPEVOL  = vol-id   +
            CRDATE   = createion-date +
            LADATE   = last-used-date
```

o System Level Functions also exist to handle archive tapes. These functions:

  - Maintain a log of tape ownership

  - Allow users to delete a tape from their list of owned volumes.

  - Allow tape compression of all user's files which are marked for deletion.

  - Maintain a list of tape volumes which are free for use.

  - Provide an option for operators to assign tape label names.

  - and provide recovery procedures for corrupted or over-written CM tapes.

o The FORTRAN callable routine is used in LAS to handle multi-band images.

  - Each band is stored in a separate file in LAS.

  - Label information must be archived for each band.

  - LAS prompts the user to verify a multi-band image name only, rather than for each individual band and label file.

  - Online file deletion is postponed untill the entire multi-band image and associated label files are successfully Archived.

Summary of Catalog Manager
System Functions

- Edit the catalog file (CMCATEDT)

- Verify the integrity of the catalog file (CMCATVFY)

- Copy a user's tapes onto a new set of tapes (CMCOMPRESS)

- Do free tape list functions (CMDOFREE)

- Delete the Catalog Manager process (CMDOWN)

- Generate a catalog file (CMGENCAT)

- List all the tapes in the Catalog (CMTAPELIST)

- Lock the catalog file for editing (CMLOCK)

- Log on as another user (CMONAS)

- Toggle Catalog Manager debug switchword (CMTOGGLE)

- Unlock the catalog file after editing (CMUNLOCK)

- Create the Catalog Manager process (CMUP)

- Add or delete a user from the catalog (CMUSER)

- Log off Catalog Manager users (REMUSR)

- Profile a Catalog Manager tape (PROFILE)

- Dump a Catalog Manager tape file onto disk in VMS format (RESTOREF)

LAS USER SCENARIO

o Tape ingest, subset, classification, registration, film output and archive.

- Concentration on the use of directory names and file attributes
  for searching by example user operations.

LAS USER SCENARIO

DIRECTORY: #IRANI.PROJECTS.CLASS.

INGEST FROM TAPE	SUBSET STUDY AREA (copy window)
FULLTM.B1.P;1	WINDOW.B1;1
FULLTM.B2.P;1	WINDOW.B2;1
FULLTM.B3.P;1	WINDOW.B3;1
FULLTM.B4.P;1	WINDOW.B4;1
FULLTM.B5.P;1	WINDOW.B5;1
FULLTM.B7.P;1	WINDOW.B7;1

SCALE I*2 DATA RANGE TO BYTE (0-255)	CONVERT DATA TYPE TO BYTE
AREA.GDF;1	IMAGE.GDF;1
AREA.GM1;1	IMAGE.GM1;1
AREA.GM2;1	IMAGE.GM2;1
AREA.GM3;1	IMAGE.GM3;1
AREA.GM4;1	IMAGE.GM4;1
AREA.GM5;1	IMAGE.GM5;1
AREA.GM6;1	IMAGE.GM6;1

ANALYSE IMAGE	CREATE CLASSIED IMAGE
STATS1;1	LAND.K;1
STATS2;1	LAND.B;1

REGISTER TO MAP PROJECTION	CREATE DISPLAY IMAGE
MAP.TIEPTS;1	COLOR.LUK
LUK.TIEPTS;1	COLOR.LUB
LUK.GRID	LUK.LUT
LUK.REG	LUB.LUT
LUB.REG	

```
CHLIST-FILE NAME=*

#IRANI.BENCH1.GM1;01
#IRANI.BENCH1.GM2;01
#IRANI.BENCH1.GM3;01
#IRANI.BENCH1.GM4;01
#IRANI.BENCH1.GM5;01
#IRANI.BENCH1.GM6;01
#IRANI.BENCH1;01
#IRANI.CAL.GRP;01
#IRANI.CAL.IMG;01
#IRANI.MTF.GRP;01
#IRANI.MTF;01
#IRANI.PROJECTS.CLASS.AREA.GM1;01
#IRANI.PROJECTS.CLASS.AREA.GM2;01
#IRANI.PROJECTS.CLASS.AREA.GM3;01
#IRANI.PROJECTS.CLASS.AREA.GM4;01
#IRANI.PROJECTS.CLASS.AREA.GM5;01
#IRANI.PROJECTS.CLASS.AREA.GM6;01
#IRANI.PROJECTS.CLASS.AREA;01
#
```

```
#IRANI.PROJECTS.CLASS.AREA.GM6;01
#IRANI.PROJECTS.CLASS.AREA;01
#IRANI.PROJECTS.CLASS.COLOR.LUB;01
#IRANI.PROJECTS.CLASS.COLOR.LUK;01
#IRANI.PROJECTS.CLASS.FULLTM.B1.P;01
#IRANI.PROJECTS.CLASS.FULLTM.B2.P;01
#IRANI.PROJECTS.CLASS.FULLTM.B3.P;01
#IRANI.PROJECTS.CLASS.FULLTM.B4.P;01
#IRANI.PROJECTS.CLASS.FULLTM.B5.P;01
#IRANI.PROJECTS.CLASS.FULLTM.B7.P;01
#IRANI.PROJECTS.CLASS.IMAGE.GM1;01
#IRANI.PROJECTS.CLASS.IMAGE.GM2;01
#IRANI.PROJECTS.CLASS.IMAGE.GM3;01
#IRANI.PROJECTS.CLASS.IMAGE.GM4;01
#IRANI.PROJECTS.CLASS.IMAGE.GM5;01
#IRANI.PROJECTS.CLASS.IMAGE.GM6;01
#IRANI.PROJECTS.CLASS.IMAGE;01
#IRANI.PROJECTS.CLASS.LAND.B;01
#IRANI.PROJECTS.CLASS.LAND.K;01
#IRANI.PROJECTS.CLASS.LUB.LUT;01
#IRANI.PROJECTS.CLASS.LUB.REG;01
#IRANI.PROJECTS.CLASS.LUK.GRID;01
#IRANI.PROJECTS.CLASS.LUK.LUT;01
#IRANI.PROJECTS.CLASS.LUK.REG;01
```

```
#IRANI.PROJECTS.CLASS.LUK.TIEPTS;01
#IRANI.PROJECTS.CLASS.MAP.TIEPTS;01
#IRANI.PROJECTS.CLASS.STATS1;01
#IRANI.PROJECTS.CLASS.STATS2;01
#IRANI.PROJECTS.CLASS.WINDOW.B1;01
#IRANI.PROJECTS.CLASS.WINDOW.B2;01
#IRANI.PROJECTS.CLASS.WINDOW.B3;01
#IRANI.PROJECTS.CLASS.WINDOW.B4;01
#IRANI.PROJECTS.CLASS.WINDOW.B5;01
#IRANI.PROJECTS.CLASS.WINDOW.B7;01
#IRANI.ROSE.V01.LAB;01
#IRANI.ROSE;01
#IRANI.STATS1;01
#IRANI.TIEPTS2;01
#IRANI.UNIFORM.GRID;01
#IRANI.UNIFORM.GRP;01
#IRANI.WASH.CLASS;01
#IRANI.WASH.CLASS;02
#IRANI.WASH.QUARTER1.B1.P;01
#IRANI.WASH.QUARTER1.B2.P;01
#IRANI.WASH.QUARTER1.B3.P;01
#IRANI.WASH.QUARTER1.B4.P;01
#IRANI.WASH.QUARTER1.B5.P;01
#IRANI.WASH.QUARTER1.B6.P;01
```

```
TAE>CMSET #IRANI.PROJECTS

]] CMSEARCH-ATTR NAME=* DATA1=GDF

#IRANI.PROJECTS.CLASS.AREA;01
#IRANI.PROJECTS.CLASS.IMAGE;01


]] CMSEARCH-ATTR NAME=#IRANI.* DATA1=GDF

#IRANI.BENCH1;01
#IRANI.CAL.GRP;01
#IRANI.MTF.GRP;01
#IRANI.PROJECTS.CLASS.AREA;01
#IRANI.PROJECTS.CLASS.IMAGE;01
#IRANI.UNIFORM.GRP;01

]]
```

```
>>CMLIST-DIR DIR=*

#IRANI.PROJECTS.CLASS.AREA
#IRANI.PROJECTS.CLASS.COLOR
#IRANI.PROJECTS.CLASS.FULLTM
#IRANI.PROJECTS.CLASS.IMAGE
#IRANI.PROJECTS.CLASS.LAND
#IRANI.PROJECTS.CLASS.LUB
#IRANI.PROJECTS.CLASS.LUK
#IRANI.PROJECTS.CLASS.MAP
#IRANI.PROJECTS.CLASS.STATS1
#IRANI.PROJECTS.CLASS.STATS2
#IRANI.PROJECTS.CLASS.WINDOW


>>CMLIST-DIR DIR=*.LUK.*

#IRANI.PROJECTS.CLASS.LUK.GRID;01
#IRANI.PROJECTS.CLASS.LUK.LUT;01
#IRANI.PROJECTS.CLASS.LUK.REG;01
#IRANI.PROJECTS.CLASS.LUK.TIEPTS;01
>>
```

```
>>CMSEARCH-ATTR NAME=#CROSSCUT  DATA1=GDF

#CROSSCUT.BIG.GRP;01
#CROSSCUT.DROSE;01
#CROSSCUT.FALL;01
#CROSSCUT.MONKEY;01
#CROSSCUT.OHIO.GDF;01
#CROSSCUT.RAND.IMG;01
#CROSSCUT.SANFALL.GDF;01
#CROSSCUT.SANFRAN.GDF;01
#CROSSCUT.SLICE.GDF;01
#CROSSCUT.SLICEZ.GDF;01
#CROSSCUT.WIDE;01
#CROSSCUT.X.SLICE;01
#CROSSCUT.XSLICE.GDF.KAR;01
#CROSSCUT.XSLICE.GDF.KAR;02
#CROSSCUT.XSLICE.GDF;01
#CROSSCUT.XSLICE7.GDF;01
#CROSSCUT.X1000.KAR.KART;01
#CROSSCUT.X1000.KAR;01
#CROSSCUT.X1000.KAR;02
#CROSSCUT.X1000;01
```

145

```
▓▓▓▓▓ proc "CMCHGATR", library "CM$USREXE"                      Pg 1+

Change Attributes of a Cataloged File

   parm        description                        value
   ────        ───────────                        ─────


   NAME        Data File or Directory Name
               (No wildcards allowed)



   EDIT        Edit Attributes                    "EDIT"
               EDIT or NOEDIT

   DATE        Data Date (ex. 14-NOV-1984)        —   (null value)

   TIME        Data Time (ex.  06:06:38)          —   (null value)

   CLAT        Center Latitude (-90 to +90)         —   (null value)

   Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
   ▓
```

```
▓▓▓▓▓ proc "CMCHGATR", library "CM$USREXE"                      Pg 2+

Change Attributes of a Cataloged File

   parm        description                        value
   ────        ───────────                        ─────

   DLAT        Delta Latitude                     —   (null value)

   CLON        Center Longitude (-180 to +180)    —   (null value)

   DLON        Delta Longitude                    —   (null value)

   STARTLIN    Starting line number               —   (null value)

   LINES       Number of lines                    —   (null value)

   LINEINC     Line increment                     —   (null value)

   STARTSMP    Starting sample number             —   (null value)

   Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
   ▓
```

146

OE POOR QUALITY" appears in top margin

USER proc "CMCHCATR", library "CM$USREXE"   Pg 3+

Change Attributes of a Cataloged File

parm	description	value
SAMPLES	Number of samples per line	— (null value)
SAMPINC	Sample increment	— (null value)
BANDS	Number of bands	— (null value)
SPECORG	Spectral organization	— (null value)
PROJECT	Project name - (1 to 30 chars.)	— (null value)
INSTR	Instrument number (-128 to 127)	— (null value)

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

USER proc "CMCHCATR", library "CM$USREXE"   Pg 4+

Change Attributes of a Cataloged File

parm	description	value
SOURCE	Source Number (-128 to 127)	— (null value)
DATA1	Data Type 1 (1 to 8 chars.)	— (null value)
DATA2	Data Type 2 (1 to 8 chars.)	— (null value)
USER1	User Field 1 (1 to 8 chars.)	— (null value)
USER2	User Field 2 (1 to 8 chars.)	— (null value)
USER3	User Field 3 (1 to 8 chars.)	— (null value)
USER4	User Field 4 (1 to 8 chars.)	— (null value)

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

147

Change Attributes of a Cataloged File

parm	description	value
VERSION	BEST for Best Version	— (null value)

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
?■

Change Attributes of a Cataloged File

parm	description	value
▓SSOC▓	Associated File(s) (maximum of 30 entries; valid for files only)	"$IRANI.PROJECTS.CLASS.LUK (1) .REG" "$IRANI.PROJECTS.CLASS.LUK (2) .LUT" "$IRANI.PROJECTS.CLASS.LUK (3) .TIEPTS" "$IRANI.PROJECTS.CLASS.LUK (4) .GRID" "$IRANI.PROJECTS.CLASS.COL (5) OR.LUK" █████████████████████ (6) (7) (8)+

[TAE-TNODEF] No default value defined for 'ASSOC(6)'.
Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
▓ASSOC(6)=$IRANI.PROJECTS.CLASS...█

proc "CHCHGATR", library "CH$USREXE"   Pg 6.

Change Attributes of a Cataloged File

parm	description	value
ASSOC	Associated File(s) (maximum of 30 entries; valid for files only)	"#IRANI.PROJECTS.CLASS.LUK (1) .REG" "#IRANI.PROJECTS.CLASS.LUK (2) .LUT" "#IRANI.PROJECTS.CLASS.LUK (3) .TIEPTS" "#IRANI.PROJECTS.CLASS.LUK (4) .GRID" "#IRANI.PROJECTS.CLASS.COL (5) OR.LUK" (6) (7) (8)+

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
?SAVE ARCSET

---

proc "CHCHGATR", library "CH$USREXE"   Pg 6.

Change Attributes of a Cataloged File

parm	description	value
ASSOC	Associated File(s) (maximum of 30 entries; valid for files only)	"PROJECTS.CLASS.STATS1" (1) "PROJECTS.CLASS.LAND.K" (2) "PROJECTS.CLASS.LUK.GRID" (3) "PROJECTS.CLASS.COLOR.LUK" (4) "PROJECTS.CLASS.LUK.LUT" (5) (6) (7) (8) (9) (10) (11) (12) (13)+

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
?RESTORE LANDSET

#IRANI.PROJECTS.CLASS.IMAGE;01

CM Name Type	= file		Disk Volume ID	= LAUSR1
Tape Label	=		Tape copy status	= nonexistent
Creation Date	= 2-OCT-1986		Creation Time	= 17:34:41
Last Access Date	= 3-OCT-1986		Last Access Time	= 11:30:59
Date	=		Time	=
Center Latitude	=		Delta Latitude	=
Center Longitude	=		Delta Longitude	=
Starting Line	=		Number of Lines	=
Line Increment	=		Starting Sample	=
Number of Samples	=		Sample Increment	=
Number of Bands	=		Spectral Org.	=
Source	=		Instrument	=
Data Type 1	= GDF		Data Type 2	= 34R0A6A2
User Field 1	=		User Field 2	=
User Field 3	=		User Field 4	=
Version	=			
Project	=			

Enter E to exit or press RETURN to continue: █

|				
Center Longitude	=		Delta Longitude	=
Starting Line	=		Number of Lines	=
Line Increment	=		Starting Sample	=
Number of Samples	=		Sample Increment	=
Number of Bands	=		Spectral Org.	=
Source	=		Instrument	=
Data Type 1	= GDF		Data Type 2	= 34R0A6A2
User Field 1	=		User Field 2	=
User Field 3	=		User Field 4	=
Version	=			
Project	=			

Enter E to exit or press RETURN to continue:

Associated Files:

#IRANI.PROJECTS.CLASS.STATS1
#IRANI.PROJECTS.CLASS.LAND.K
#IRANI.PROJECTS.CLASS.LUK.GRID
#IRANI.PROJECTS.CLASS.COLOR.LUK
#IRANI.PROJECTS.CLASS.LUK.LUT

Enter E to exit or press RETURN to continue:

CONFIGURATION

o Hardware.

o TAE Sub-process.

o LAS and CM executable images

o Communication via system-service mailbox under VMS.

o Catalog on disk

o One user request at a time.

Configuration

User Access to the Catalog
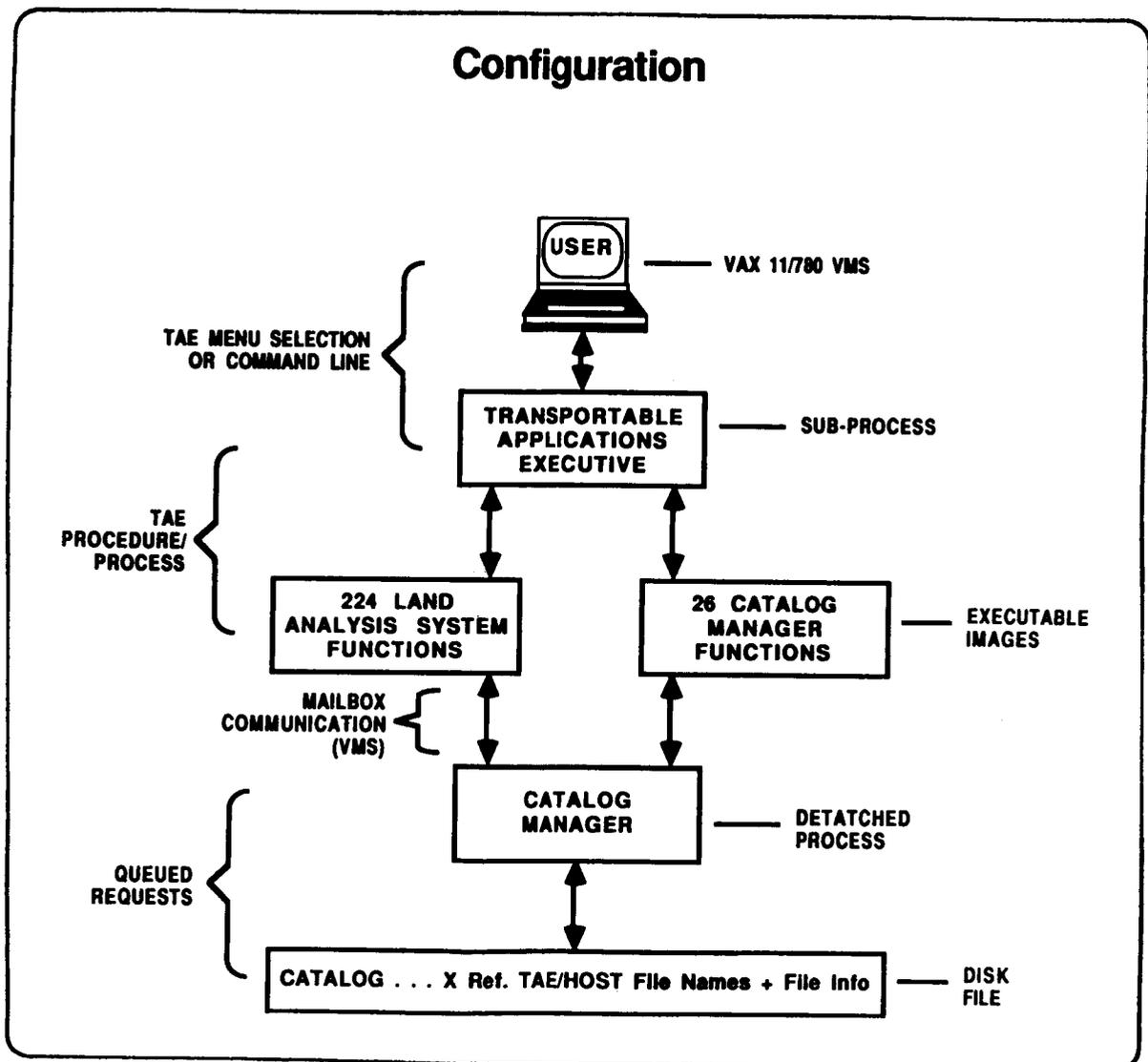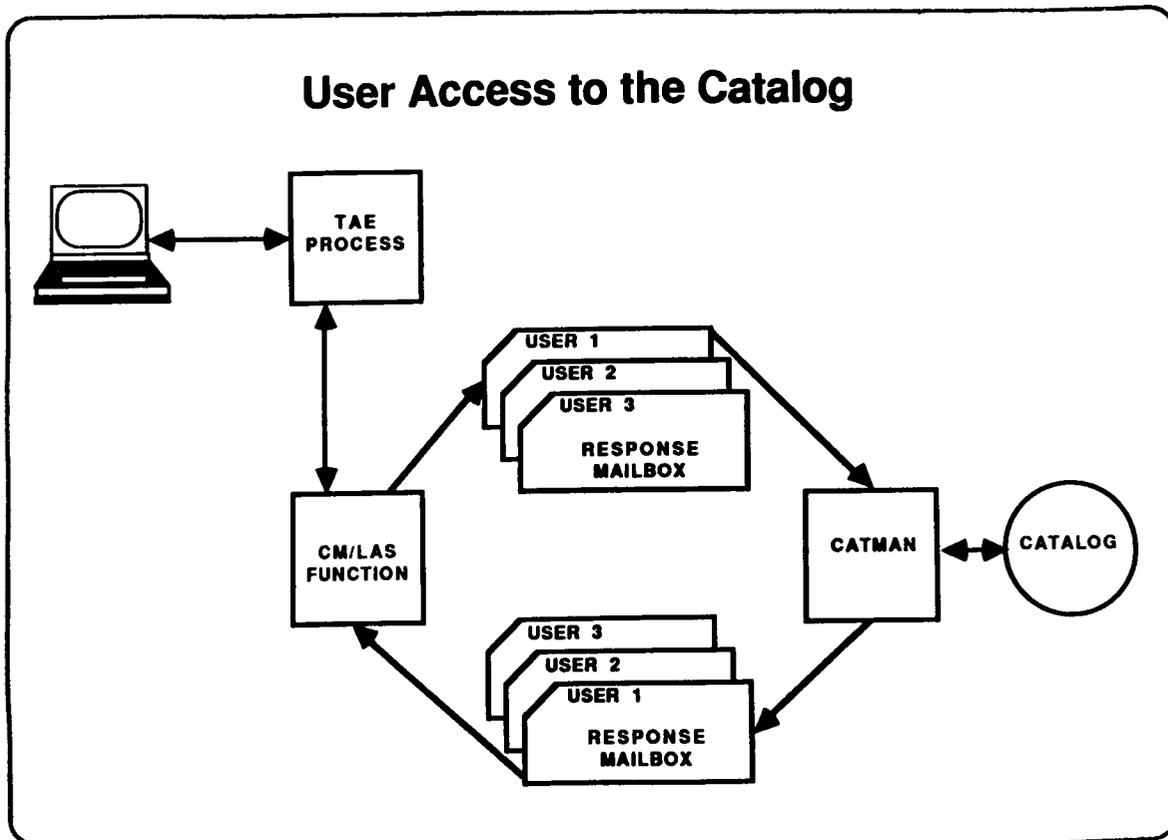
PERFORMANCE

o The Catalog can be corrupted via hardware problems such as a head-crash.

o System functions exist to verify catalog integrity on a regular basis.

o System Functions Exist to Edit the Catalog to recover from corruption.

o It has been suggested that the catalog could be decentralized, e.g., maintain one catalog per user. This would lessen impact of catalog corruption on all users and the system as a whole. Right now, if CM Goes Down, so does LAS. There may be a problem, however, in accessing files across user roots in a decentralized catalog.

o Mailbox Communication may slow down the performance of LAS by queueing one user for catalog access at a time. This occurrs during times of heavy system load at Goddard. Decentralizing the catalog may reduce the mailbox communication bottle-neck.

o EDC is currently working on an "all new" version of CM using a fresh design concept.