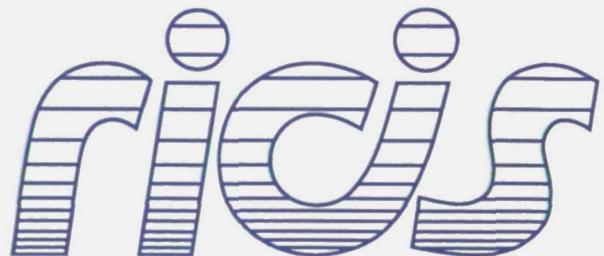# The Johnson Space Center Management Information Systems (JSCMIS)

Interim Report:

1) Requirements definition and design specifications for versions 2.1 & 2.1.1
2) Documented Test Scenario Environments
3) Security Object Design & Specifications

TNT Consulting

ricis

Research Institute for Computing and Information Systems
University of Houston-Clear Lake

The RICIS Concept

The University of Houston-Clear Lake established the Research Institute for Computing and Information Systems (RICIS) in 1986 to encourage the NASA Johnson Space Center (JSC) and local industry to actively support research in the computing and information sciences. As part of this endeavor, UHCL proposed a partnership with JSC to jointly define and manage an integrated program of research in advanced data processing technology needed for JSC's main missions, including administrative, engineering and science responsibilities. JSC agreed and entered into a continuing cooperative agreement with UHCL beginning in May 1986, to jointly plan and execute such research through RICIS. Additionally, under Cooperative Agreement NCC 9-16, computing and educational facilities are shared by the two institutions to conduct the research.

The UHCL/RICIS mission is to conduct, coordinate, and disseminate research and professional level education in computing and information systems to serve the needs of the government, industry, community and academia. RICIS combines resources of UHCL and its gateway affiliates to research and develop materials, prototypes and publications on topics of mutual interest to its sponsors and researchers. Within UHCL, the mission is being implemented through interdisciplinary involvement of faculty and students from each of the four schools: Business and Public Administration, Education, Human Sciences and Humanities, and Natural and Applied Sciences. RICIS also collaborates with industry in a companion program. This program is focused on serving the research and advanced development needs of industry.

Moreover, UHCL established relationships with other universities and research organizations, having common research interests, to provide additional sources of expertise to conduct needed research. For example, UHCL has entered into a special partnership with Texas A&M University to help oversee RICIS research and education programs, while other research organizations are involved via the "gateway" concept.

A major role of RICIS then is to find the best match of sponsors, researchers and research objectives to advance knowledge in the computing and information sciences. RICIS, working jointly with its sponsors, advises on research needs, recommends principals for conducting the research, provides technical and administrative support to coordinate the research and integrates technical results into the goals of UHCL, NASA/JSC and industry.

Preface

This research was conducted under auspices of the Research Institute for Computing and Information Systems by TNT Consulting. Dr. Peter C. Bishop, Director of the Space Business Research Center, University of Houston-Clear Lake served as RICIS research coordinator.

The views and conclusions contained in this report are those of the author and should not be interpreted as representative of the official policies, either express or implied, of NASA or the United States Government.

1.a. <u>Requirements</u> <u>Definition</u> <u>and</u> <u>Specifications</u> <u>for</u> <u>JSCMIS</u>
<u>Version</u> <u>2.1:</u>

.1 Destination Object
   The destination object will handle the following
   capabilities.
 .1 Single report destinations
    Each single report may have one of the following
    destinations.
   .1 Screen
      A report with the destination of SCREEN will run
      and be displayed on the screen.
   .2 System Printer
      A report with the destination of SYSPRINT will be
      written to a disk file and the user will be
      placed in the system print utility.
   .3 PC Printer
      A report will be written to a disk file in
      standard report format and then transferred via
      PCXFER to the user's PC printer. A width of
      either 80 columns or 132 columns may be
      specified.
   .4 PC Text Files
      A report will be written to a disk file in
      standard report format and then transferred via
      PCXFER to the user's PC disk. A disk, directory,
      file name and extension may be specified.
   .4 PC Delimited Files
      A report will be written to a disk file in a
      "delimited" format with double quotes (") around
      text and date fields, numbers without special
      display characters, and each field separated by
      the TAB (X'05') character. The resulting file is
      then transferred via PCXFER to the user's PC
      disk. A disk, directory, file name and extension
      may be specified.
   .5 Mainframe Text Files
      A report will be written to a disk file in
      standard report format. A file name and file type
      (extension) may be specified.
   .6 Mainframe Delimited Files
      A report will be written to a disk file in a
      "delimited" format with double quotes (") around
      text and date fields, numbers without special
      display characters, and each field separated
      by the TAB (X'05') character. A file name and
      type (extension) may be specified.
   .7 PROFS Note
      A report may be sent in the form of a PROFS note
      to any user on any mainframe on the Center
      Information Network (CIN). The PROFS note will
      have an addressee, network node and subject.

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1.b. Requirements Definition and Design Specifications for JSCMIS Version 2.11:

Version 2.11 will include the following items:

.1 Corrections to version 2.10
The following corrections/additions will be made to version 2.10.
.1 Report names were duplicating in group verification list process. The module that prefers this function will be corrected.
.2 The group DESCR (description) key will be activated.
.3 The DESCR (description) key on erase menus will be activated.
.4 The List key for the group components window will be activated to function only for destination types.
.5 Destination will be added to the extended description of a report.
.6 The colors on the conditions value window will be reviewed and changed if necessary.
.7 The format object will create format programs based on the components stored in the interface driver tables rather than using the format programs that exist on each application disk.

.2 MOD/ESS Interface Files
The MOD/ESS Interface Files is a standalone interface from the MOD/ESS system to JSCMIS version 2. In addition, the outlet files for the ESS will no longer be in the standard text format.

.1 Each line of any outlet file (application list, report list or report outlet) will begin with a letter code to designate the type line. The letter codes are:
T = Title line
H = Column header
D = Data line
F = Footing line
2. The application list will be written in a delimited form with double quotes (") around text and date fields and each field will be separated by the TAB (X'05') character.

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2. Test Scenario Environments:

Testing of JSCMIS occurs in two situations. The first is a new release of NOMAD or the operating system. New releases of NOMAD or the arises when changes are made in the code of JSCMIS. In this case special attention should be paid to the areas of the interface which have been modified.

The following scenario illustrates the steps through which one should go in testing.

1. Pick an application.
2. Run a standard report from the report menu.
3. After the report is run press the print key and try all the destinations.
4. Alter a standard report.
5. Change the destination and run it.
6. Save the new version.
7. Run your saved report from the report menu.
8. Pick new from the report menu.
9. Pick a standard format from the F7.
10. Build a new condition.
11. Make the first condition line by F7 all pieces.
12. Make a second line by typing in.
13. Make a third line by using wildcards.
14 Run the report.
15. Save the condition.
16. Alter the condition.
17. Add a line.
18. Save the condition.
19. Alter the condition.
20. Delete a line.
21. Change a line.
22. Run the report.
23. Alter the standard format.
24. Save your changes.
25. Run the new format with your condition set.
26. Go back to report menu.
27. Pick new.
28. Build a new format.
29. Include all options - use F7 and type them in.
30. Save it and run it.
31. Alter your format. Put in an across.
32. Save and run.
33. Alter your format. Use page up and page down.
34. Save and run.
35. Save your format with your conditions.
36. Return to report menu.
37. Build a group - include your new report and a standard report.
38. Run the group.
39. Alter the group members and destination and run again.

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Specifications for Security Tool
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1. JSCMIS version 2.0 interface tables that are used:

   .1 _MIRSMSGS - messages to users
   .2 _OPERATORS- operators for conditions
   .3 _FKEYACTIONS - function keys available to be used by
                     windows
   .4 _COLORS - colors for windows
   .5 _INSTRUCTIONS - instructions for each windows
   .6 _WINDOWS - main information on each windows needed
   .7 _WINDFKEYS - fkeys used to each window
   .8 _WINDBODIES - layout of window (text and item)

2. Security database to be built by application developer

   .1 Each security database and its masters will have unique
      names. This will be necessary because an application
      may have more than one active database. The database
      name given to the security database will be entered in
      the _DATABASES master so that developers can see what
      names are already in use. Each security database will
      need three masters.

   .2 Master Names
      .1 XXODIFY - userid, expiration date, exclude or
         include, array of item names
      .2 XXCOMP - userid, type (BLS or CON), condition seq,
         condition value.
      .3 XXLINE - userid, line seq, line value

3. General programs needed
   Used from JSCMIS
   .1 MIDMSGHN - processor for message handler
   .2 MIDSRKEY - perform rkeys and set status codes
   .3 MIDMSGPR - locate and display message on popup window
   .4 MIDBLSOB - BLS object
   .5 MIDVALOB - value object
   .6 MIDFLDOB - field object
   .7 MIDOPROB - operator object

4. Programming process

   The security administrator will be prompted to enter a
   userid. (SECFM01) If the id is in the database the basic
   choice menu (SECFM02) will be brought up and the security
   selected will be modified. After that modification is
   complete SECFM02 will return. Additional security can be
   modified or the user can pick no more changes. At this
   point SECFM01 will be put up so that more security entries
   can be added or modified.

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.2 If userid is found
   window SECFM02

```
┌────────────────────────────────────────────────────────────────┐
│                    JSCMIS Security System                       │
│                                                                 │
│  ┌─UserI.D. Entry─────────────────────────────────────┐         │
│  │ =Altering Security for XXX=====================     │         │
│  │    Position the cursor on the designed action       │         │
│  │    an press ENTER.                                  │         │
│  │    ------------------------------------------       │         │
│  │    No more changes                                  │         │
│  │    Update access to fields                          │         │
│  │    Update access to records                         │         │
│  │    Delete this user                                 │         │
│  │    =====================================            │         │
│  │                                                     │         │
│                                                                 │
│ ┌─INCLUDE fields──────────┐  ┌─INCLUDE all records where:─┐     │
│    ADMINLEV AGENCY              A. ORGADIR EQ 'A'               │
│  AGENCYFROM                                                     │
│ └─────────────────────────┘  └────────────────────────────┘    │
│   Function Keys                                                 │
│  │-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -     │
│ 12-│                                                            │
│                                                          Retn│  │
└────────────────────────────────────────────────────────────────┘
```

.3 If userid is not found
   .1 window SECFM05

```
┌────────────────────────────────────────────────────────────────┐
│                    JSCMIS Security System                       │
│                                                                 │
│  ┌─User I.D. Entry───────────────────────────────────────┐      │
│  │                                                        │      │
│  │ =Creating Security for XXX=====================        │      │
│  │  To copy another user's security, type in that         │      │
│  │  userid and press ENTER. To build new security         │      │
│  │  press ENTER.                                          │      │
│  │  -------------------------------------------------     │      │
│  │                                                        │      │
│  │  ================================================      │      │
│  │                                                        │      │
│                                                                 │
│                                                                 │
│   Function Keys                                                 │
│   -1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9- -10- -11- -12-    │
│                             List                       Retn     │
└────────────────────────────────────────────────────────────────┘
```

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.4 These windows will be used by new and existing
   .1 window SECFM06 - field security
      Instructions will say either include or exclude
      depending on the option chosen.

```
+------------------------------------------------------------------+
|                     JSCMIS Security System                       |
|                                                                  |
| —User I.D. Entry—————————————————————————————————————————————    |
|  | =Creating Security for XXX=====================|              |
|  | =INCLUDE these fields forXXX============================      |
|  |  Tab to the space beside the desired choice, enter an         |
|  |  "X" and then press ENTER to continue.                        |
|  | ------------------------------------------------------------  |
|  |    ADMINLEV            Admin Level                            |
|  |    AGENCY              Duty Status                            |
|  |    AGENCYFROM          Agency Code Transferred From           |
|  |    AGENCYTO            Agency Code Transferred To             |
|  |    ANUIND              Annuitant Indicator                    |
|  |    APPTNTEDTE          Appt Nte Limit                         |
|  |    BDYR                Degree Bachelor Year                   |
|  |    BIRTHDTE            Date of Birth                          |
|  |    CITIZEN             Citizen?                               |
|  |    COMPLEV             Competitive Level                      |
|  |    CONVENDDTE          Appt Conv Date                         |
| F | ===========================================================  |
| --1- --2- --3- --4- --5- -6- -7- -8- -9- --10- --11- -12--       |
| Descr                                        Pg Dn Pg Up Retn    |
+------------------------------------------------------------------+
```

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.2 Record Security
    .1 If existing - window SECFM07

```
+------------------------------------------------------------------+
|                    JSCMIS Security System                        |
|                                                                  |
| +-User I.D. Entry-----------------------------------------+      |
| | +-Altering Security for XXX----------------------+      |      |
| | | =Modifications Menu=========================== | on an |     |
| | |  Position the cursor on the desired            | ----- |     |
| | |  choice, and press ENTER to continue.          |       |     |
| | |  --------------------------------------------   |       |     |
| | |  No more changes                               |       |     |
| | |  Add a condition line                          |       |     |
| | |  Change (Replace) a condition line             |       |     |
| | |  Delete a condition line                       |       |     |
| | | =============================================== |       |    |
|                                                                  |
| +-EXCLUDE fields----------+  +-INCLUDE all records where: ---+   |
| | ADMINLEV AGENCY         |  | A.   ORGADIR EQ 'A'           |   |
| | AGENCYFROM              |  | B.   AGE GT 35.0              |   |
| |                         |  |  A & B                        |   |
| +-------------------------+  +-------------------------------+   |
| | Function Keys                                                  |
| | --1---2---3- --4- --5- -6- -7- -8- -9- --10- --11- -12-        |
| |                                                       Retn     |
+------------------------------------------------------------------+
```

.2 If new
    .1 SECFM08 - field name and operator

```
+------------------------------------------------------------------+
|                    JSCMIS Security System                        |
|                                                                  |
| +-User I.D. Entry-----------------------------------------+      |
| | +-Altering Security for XXX----------------------------+ |     |
| | | =Record Security Build============================= | |     |
| | |  Please fill in the blanks below and               | |     |
| | |  press ENTER to continue. For a list of            | |     |
| | |  valid entries for any blank, press the            | |     |
| | |  LIST function key.                                | |     |
| | |  -------------------------------------------------  | |     |
| | |  Field Name        Operator                        | |     |
| | |  orgadir           eq                              | |     |
| | | ================================================== | |     |
|                                                                  |
| +-EXCLUDE fields--------+  +-INCLUDE all records where: ---+     |
| | ADMINLEV AGENCY       |  | All Records                   |     |
| | AGENCYFROM            |  |                               |     |
| +-----------------------+  +-------------------------------+     |
| | Function Keys                                                  |
| | --1- --2- --3- --4- -5- -6- --7- -8- -9- --10- --11- -12-      |
| |                              List                    Retn      |
+------------------------------------------------------------------+
```

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.3 SECFM10 - BLS

```
                    JSCMIS Security System

 ┌─User I.D. Entry──────────────────────────────┐
 │ ┌─Altering Security for XXX──────────────────┐
=Valid Symbols==================  ────────────────────        11
 &  AND Both values are TRUE  │ below and              records
 +  OR  Either value is TRUE  │ or a list of           where:
 *  XOR Only one value is TRUE│ k, press the           ds
 ^  NOT One value is not TRUE │
(,),A through Z                  ─────────────
 │=Conditions Set Logic Statement=========================
   If you press ENTER or the RETN function key without
   change, this statement will be used. Please make any
   change and press ENTER when you are finished.
   ─────────────────────────────────────────────────────
   Enter Desired Logic
     A & B
   =======================================================

 Function Keys
 -1- -2- -3- --4- --5- --6- --7- --8- --9- -10- -11- -12-
                           Note         Log  Help       Retn
```

.4 SECFM11 - action menu

```
                    JSCMIS Security System

 ┌─User I.D. Entry──────────────────────────────┐
 │ ┌─Altering Security for XXX──────────────────┐
 │ │ ┌─Modifications Menu====================== │ on an
 │ │   Position the cursor on the desired       │ ─────
 │ │   choice, and press ENTER to continue.     │
 │ │   ─────────────────────────────────────── │
 │ │   No more changes                          │
 │ │   Add a condition line                     │
 │ │   Change (Replace) a condition line        │
 │ │   Delete a condition line                  │
 │ │ ========================================== │

─EXCLUDE fields──────────  ┌─INCLUDE all records where: ─
ADMINLEV AGENCY            │ A.   ORGADIR EQ 'A'
AGENCYFROM                 │ B.   AGE GT 35.0
                          │    A & B
 Function Keys
 --1---2---3- --4- --5- -6- -7- -8- -9- --10- --11- -12-
                                                    Retn
```

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4. Programs needed
   .1 MIDSECOB - security object
   .2 MIDSECON - Put up first screen
   .3 MIDSECCU - Copy another user security
   .4 MIDSECNU - enter a new user's security
   .5 MIDSECFW - show field security in window
   .6 MIDSECIW - show item security in window
   .7 MIDSECFS - field security
   .8 MIDSECRS - record security
   .9 MIDSECOP - action menu
   .10 MIDSECDL - delete an entry from security
   .11 MIDSECUL - make a list of users in security
   .12 MIDSECTW - check if conditions already exist
   .13 MIDSECCN - conditions object
   .14 MIDSECCB - conditions build
   .15 MIDSECCM - conditions change menu
   .16 MIDSECCA - add a condition line
   .17 MISSECCC - change a condition line
   .18 MIDSECCD - delete a condition line
   .19 MIDSECCL - build lines from components
   .20 MIDSECCP - put values in array
   .21 MIDSECCG - get values
   .22 MIDSECBG - get lines for conditions
   .23 MIDSECTW - to be called from NOMAD profile

6. NOMAD program to called by NOMAD profile
   A program will be written to be included in all NOMAD
   profiles of applications requiring security. The program
   will read the XXMODIFY master and do REMOVES or ALLOWS on
   the database. The XXLINE master will be used to build
   RPROCS.

7. Modification to MIRSOPS database
   The DATABASES master of MIRSOPS will be modified to
   include an item SECDATA which will have the security data
   base associated with the application database. This will
   enable application developers to see if the name they have
   in mind for security has already been used. Just as
   every database going into the interface must have a unique
   name, so must the security database.