

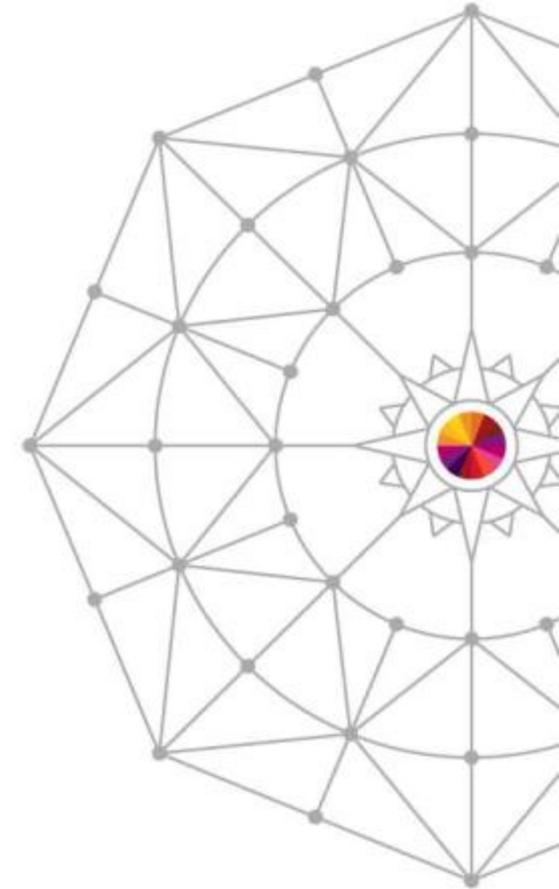
NaviQuest – Streamlining SMS

Neal Bohling

DFSMS Defect Support, IBM

March 10, 2014

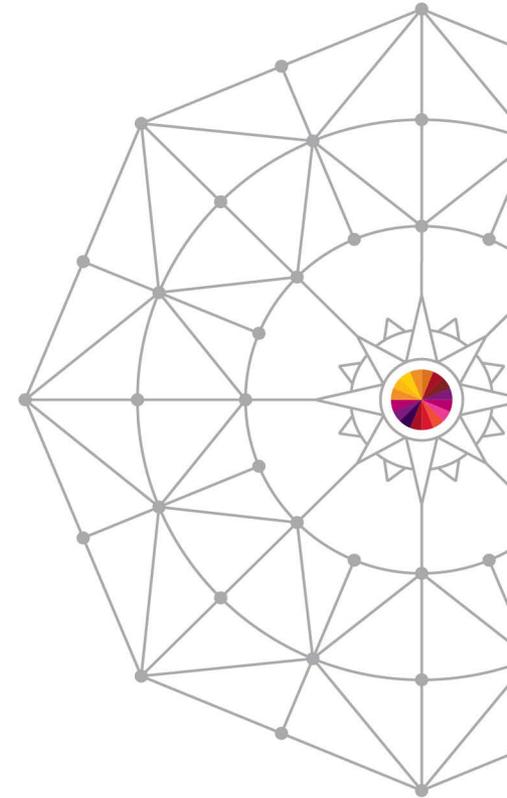
Session# 15093



Overview

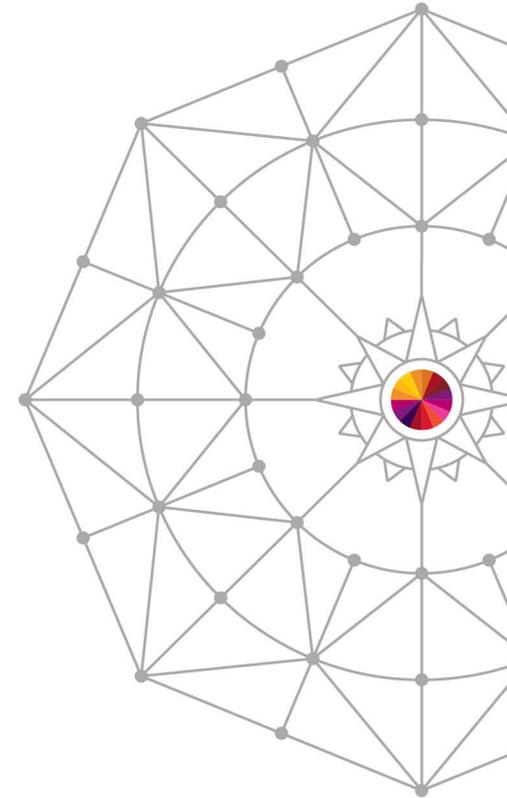
“DFSMS NaviQuest is a data and storage management tool for implementing, testing, and verifying the SMS environment.”

– *DFSMSdfp Storage Administration*



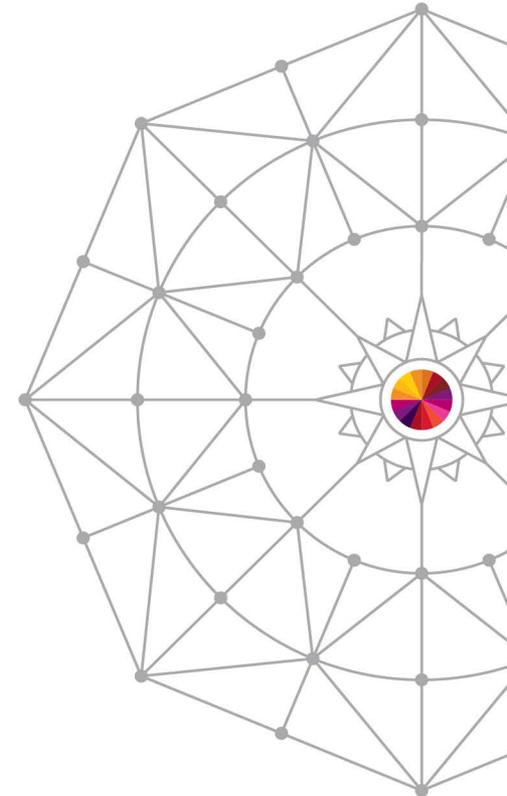
Overview

- A suite of simple tools based around SMS
- Can be run from ISMF and Batch
- Helps simplify some of the more arduous SMS tasks
 - Testing ACS
 - Creating reports
 - Bulk-updating SMS configuration



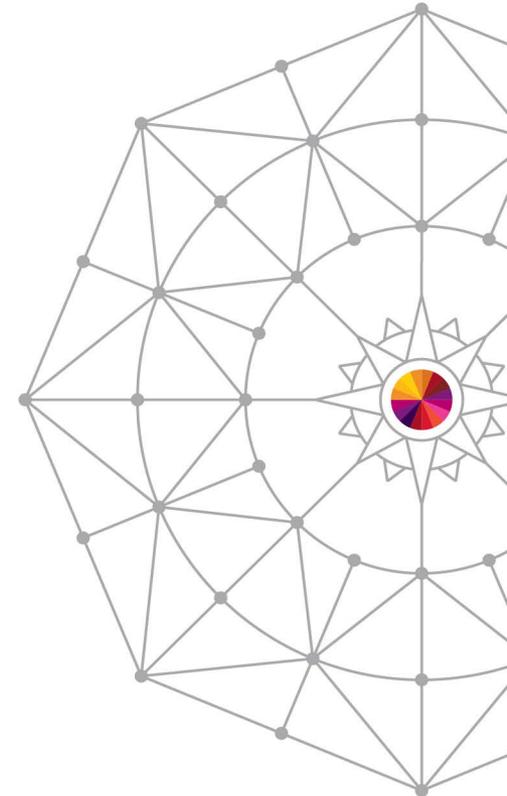
What it cannot do

- **NaviQuest** does not:
 - Know how you use your data
 - Understand your logical ACS groupings
 - Automatically generalize
 - Manage your SMS configuration
- **NaviQuest** is a suite of tools to **help you** manage your SMS configuration



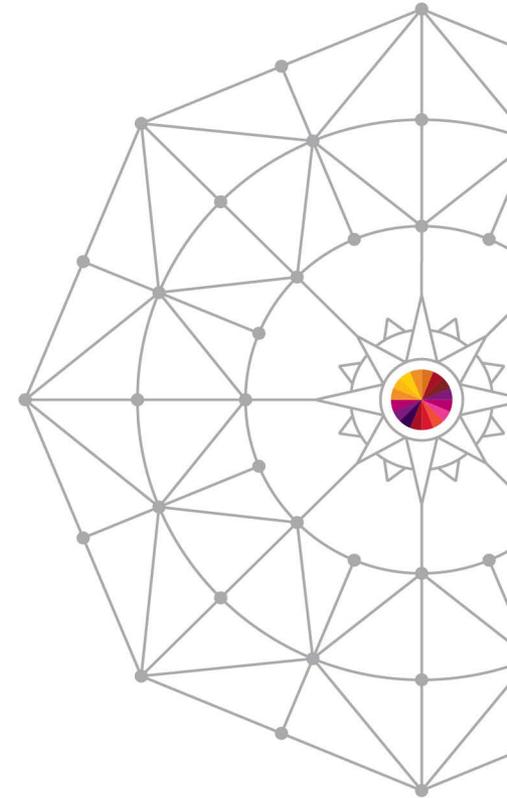
What can it do?

- **ACS Testcase Generation and Comparisons**
 - Generate ACS test cases from your data
 - Build and manage libraries of test cases
 - Exception reporting during ACS testing
- **Reporting**
 - Build reports about data sets, disk volumes, tape volumes
 - Build commands and jobs from ISMF reports
- **Batch Storage Admin**
 - Do many ISMF commands in batch
 - Save and recall ISMF queries
 - FILTLIST copy command to keep filters the same across ACS routines



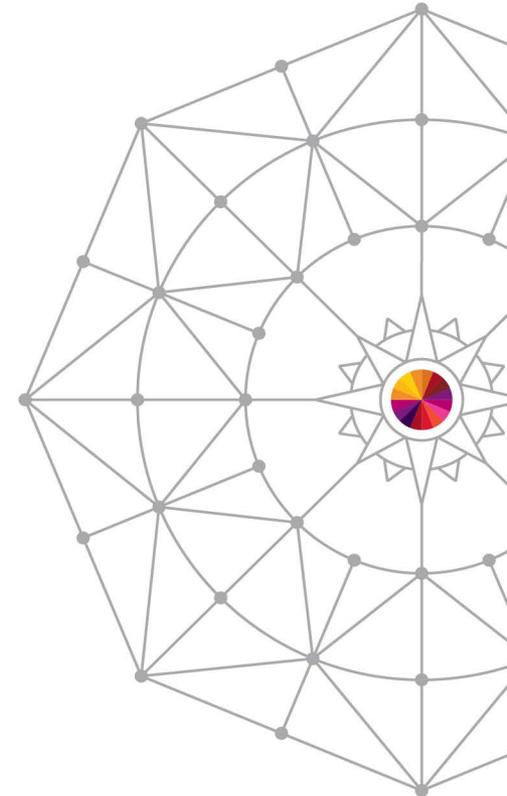
When it gets powerful:

- **Test your ACS**
 - All in batch – one job to submit
 - Finding problems is quick
- **Update SMS**
 - Keep FILTLISTS the same between all ACS routines
 - Batch tools to update SMS constructs
 - Batch jobs to add volumes to SG
- Generate commands against huge lists



Using NaviQuest

- Most functions have an ISMF panel
- There is a panel to provide JCL for batch
 - Option 7 – Just alter the SYSTSIN DD commands
- You'll need several data sets, so prepare:
 - ACS library – PDS for ACS
 - Testcase library and results data set(s) – PDS
 - Exception listing and library – two files, one flat, one PDS
 - ISPTABL – PDS with LRECL=80, FB



Finding NaviQuest

ISMF PRIMARY OPTION MENU - z/OS DFSMS V1 R13

- 0 ISMF Profile - Specify ISMF User Profile
 - 1 Data Set - Perform Functions Against Data Sets
 - 2 Volume - Perform Functions Against Volumes
 - 3 Management Class - Specify Data Set Backup and Migration Criteria
 - 4 Data Class - Specify Data Set Allocation Parameters
 - 5 Storage Class - Specify Data Set Performance and Availability
 - 6 Storage Group - Specify Volume Names and Free Space Thresholds
 - 7 Automatic Class Selection - Specify ACS Routines and Test Criteria
 - 8 Control Data Set - Specify System Names and Default Criteria
 - 9 Storage Group - Specify Data Set Recovery Parameters
 - 10 Library Management - Specify Library and Drive Configurations
 - 11 Enhanced ACS Management - Perform Enhanced Test/Configuration Management**
 - C Data Collection - Process Data Collection Function
 - G Report Generation - Create Storage Management Reports
 - L List - Perform Functions Against Saved ISMF Lists
 - P Copy Pool - Specify Pool Storage Groups for Copies
 - R Removable Media Manager - Perform Functions Against Removable Media
 - X Exit - Terminate ISMF
- Use HELP Command for Help; Use END Command or X to Exit.

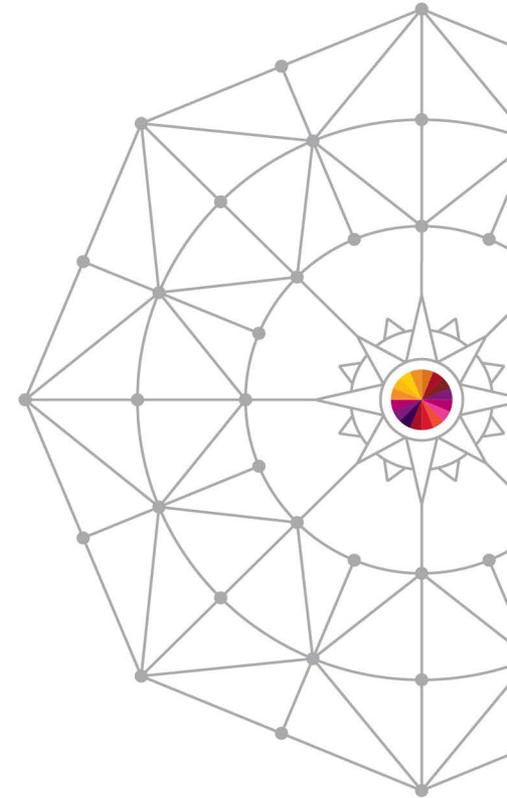


Deep Breath.
Now we'll dive into the details.



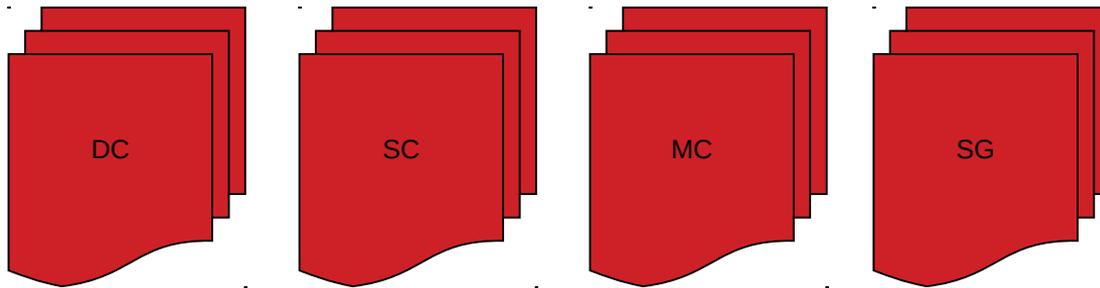
Demonstrations and Details:

- **Using COPYFILT**
- Using model command generation
- Building and use ACS test cases
- Generating a volume report
- Adding a set of volumes to a Storage Group
- Generating a new data class

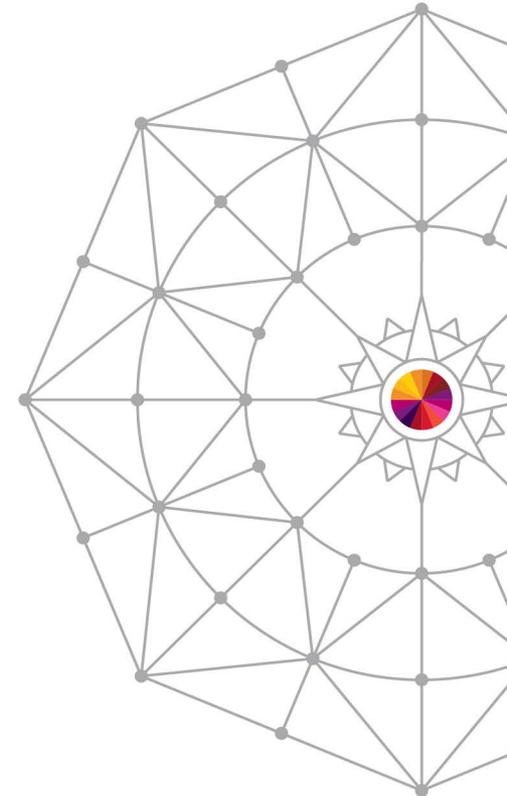
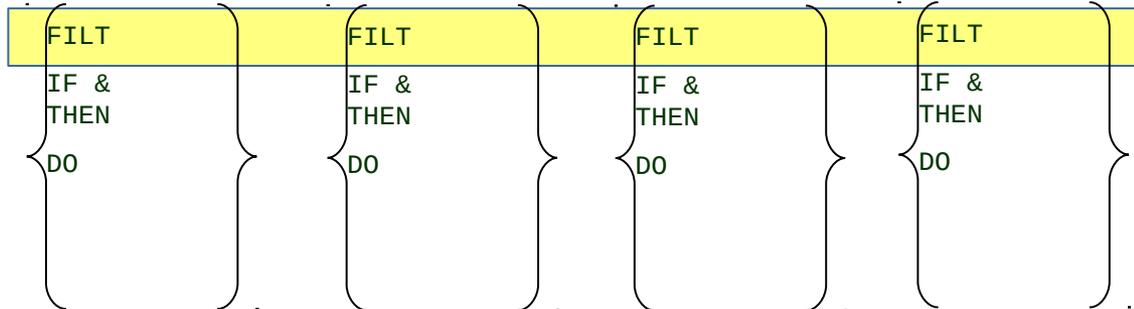


COPYFILT - INTRO

SMS CONSTRUCTS

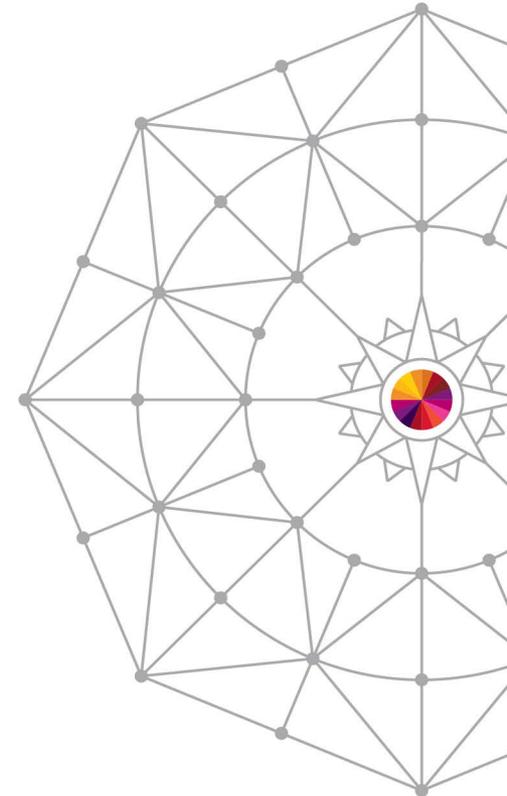


ACS ROUTINES



COPYFILT

- Copies your FILTLISTS
 - From one member (FILTLIST)
 - To all ACS members
- Uses comments lines to denote top and bottom of section:
 - Start: `/* * * * * * * * * * * * * * */`
 - End: `/** **`
 - Put in all of your ACS and FILTLIST member
- Type COPYFILT while in ISPF Edit



COPYFILT Example

```

Panel Help
-----
COPY FILTLISTS ENTRY PANEL

To copy FILTLISTS, specify the following information and press Enter:

Member Containing FILTLISTS . . . . FILTLIST
Data Class ACS Routine Name . . . . DC
Storage Class ACS Routine Name . . SC
Management Class ACS Routine Name MC
Storage Group ACS Routine Name . . SG

Change Log Entry . . Updated 8/8/13

Use HELP Command

```

```

'*****'
'* ACS DATACLAS MEMBER DC UPDATED RC = 0      * '
'* ACS STORCLAS MEMBER SC UPDATED RC = 0      * '
'* ACS MGMTCLAS MEMBER MC UPDATED RC = 0      * '
'* ACS STORGRP MEMBER SG UPDATED RC = 0      * '
'*****'
***

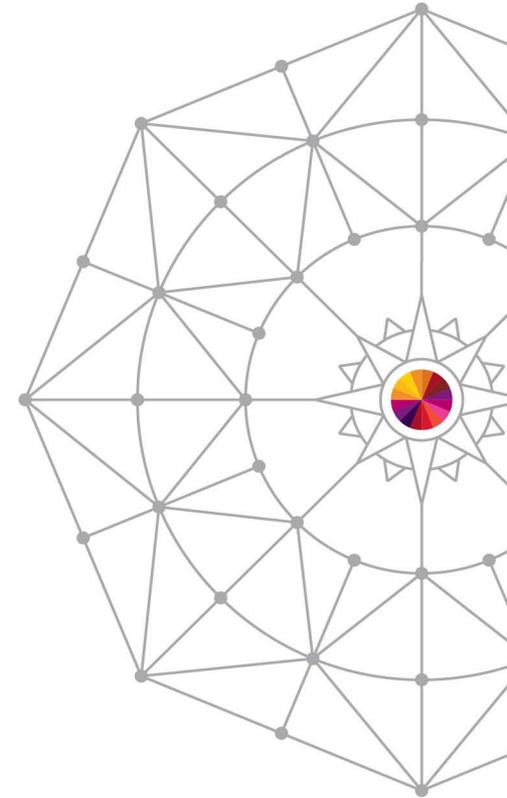
```

COPYFILT Example - Result

```
.   Menu Utilities Compilers Help
.
.   BROWSE      NEAL.SMS.ACS(SC) - 01.20                Line 00000000 Col 001 080
.   ***** Top of Data *****
.   PROC STORCLAS                                         00010001
.   /* UPDATED : USER2 - UPDATE 8/8/13 */              00020020
.   /*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*/ 00020120
.   FILTLIST RLS      INCLUDE('RLS')                    00020220
.   FILTLIST RLS64    INCLUDE('RLS64')                  00020320
.   FILTLIST SMS      INCLUDE('SMS')                    00020420
.   FILTLIST NONSMS   INCLUDE('SMSN')                   00020520
.   /** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ^
.   SELECT(&DSN(2))                                       00020620
.     WHEN(&RLS) SET &STORCLAS = 'RLS'                  00020714
.     WHEN(&SMS) SET &STORCLAS = 'SMS'                  00020817
.     OTHERWISE SET &STORCLAS = ''                     00021017
.     END                                               00030012
.   WRITE 'STORCLAS='&STORCLAS                          00030116
.   END                                                 00031005
.   ***** Bottom of Data *****                     00040003
.   .
```

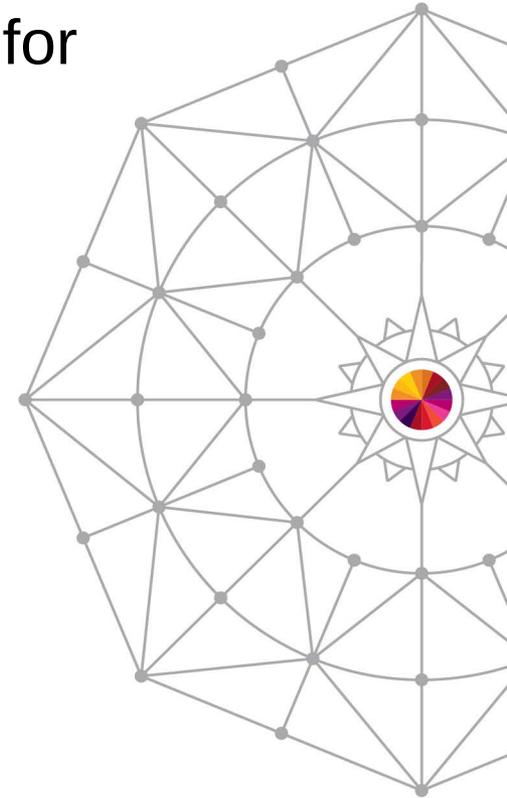
Demonstrations and Details:

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- Generating a new data class



Model Command Generation

- Generates a command based on a template for each item in a saved list
- Use any command:
 - / to denotes the Data set
 - @ to denotes VOLSER
- Great for
 - Commands that do not accept wildcards
 - Very specific lists of data sets



Model Commands - Generate DS List

```

.      ISMF PRIMARY OPTION MENU - z/OS DFSMS V1 R13
.
.  0  ISMF Profile          - Specify ISMF User Profile
.  1  Data Set              - Perform Functions Against Data Sets
.  2  Volume                - Perform Functions Against Volumes
.  3  Management Class     - Specify Data Set Backup and Migration Criteria
.

```

```

.  Panel Defaults Utilities Scroll Help
.  -----
.  DATA SET SELECTION ENTRY PANEL                               Page 1 of 5
.
.  For a Data Set List, Select Source of Generated List . . 2 (1 or 2)
.
.  1  Generate from a Saved List                                Query Name To
.      List Name . . . _____ Save or Retrieve _____
.
.  2  Generate a new list from criteria below
.      Data Set Name . . . 'NB.**'
.      Enter "/" to select option          Generate Exclusive list
.      Specify Source of the new list . . 2 (1 - VTDC, 2 - Catalog)
.      1 Generate list from VTDC
.          Volume Serial Number . . . _____ (fully or partially specified)
.          Storage Group Name . . . _____ (fully specified)
.      2 Generate list from Catalog
.          Catalog Name . . . _____
.          Volume Serial Number . . . _____ (fully or partially specified)
.          Acquire Data from Volume . . . . . Y (Y or N)
.          Acquire Data if DFSMSHsm Migrated . . Y (Y or N)
.
.  Use ENTER to Perform Selection; Use DOWN Command to View next Selection Panel;
.  Use HELP Command for Help; Use END Command to Exit.
.

```

Model Commands - Generate DS List

```

Panel  List  Dataset  Utilities  Scroll  Help
-----
Enter Line Operators below:

                                DATA SET LIST
                                Entries 1-8 of 8
                                Data Columns 4-6 of 42

LINE          DATA SET NAME          ALLOC   % NOT   COMPRESSED
OPERATOR      (2)                      USED    USED    FORMAT
---(1)-----  -----(4)-----  ---(5)-  ---(6)----
                NB.RLS.TEST1          -----  ---      ---
                NB.RLS.TEST1.DATA      810K    0      ---
                NB.RLS.TEST1.INDEX      1K      96     ---
                NB.SMS.TESTA           55K     93     NO
                NB.SMS.TESTB           55K     93     NO
                NB.SMS.TESTOUT         55K     99     NO
                NB.SMSN.TEST1          55K     93     ---
                NB.SMSN.TEST2          55K     93     ---
-----  -----  -----  -----  -----
                BOTTOM OF DATA

Command ==> SAVE NBFILS _

                                Scroll ==> HALF

```

* Note: you can see and edit your saved lists from ISMF Option L (LISTS)

Model Command Generation Results

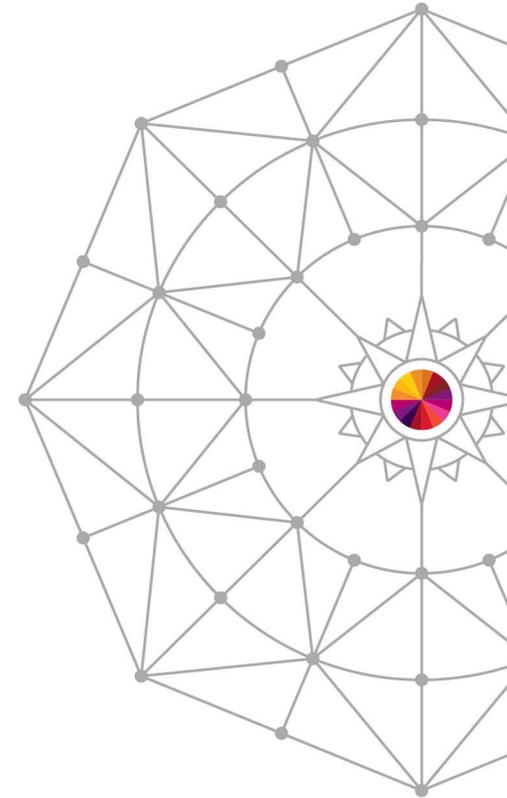
```
EDIT          USER2.M3.MODELCMD
***** Top of Data *
-Warning- The UNDO command is not available until you change
          your edit profile using the command RECOVERY ON.
000001 ALTER NB.RLS.TEST1 NEWNAME(NB.RLS.TEST1.BAK)
000002 ALTER NB.RLS.TEST1.DATA NEWNAME(NB.RLS.TEST1.DATA.BAK)
000003 ALTER NB.RLS.TEST1.INDEX NEWNAME(NB.RLS.TEST1.INDEX.BAK)
000004 ALTER NB.SMS.TESTA NEWNAME(NB.SMS.TESTA.BAK)
000005 ALTER NB.SMS.TESTB NEWNAME(NB.SMS.TESTB.BAK)
000006 ALTER NB.SMS.TESTOUT NEWNAME(NB.SMS.TESTOUT.BAK)
000007 ALTER NB.SMSN.TEST1 NEWNAME(NB.SMSN.TEST1.BAK)
000008 ALTER NB.SMSN.TEST2 NEWNAME(NB.SMSN.TEST2.BAK)
***** Bottom of Data
```

- Have JCL import this as SYSIN, and you have a dynamic rename job

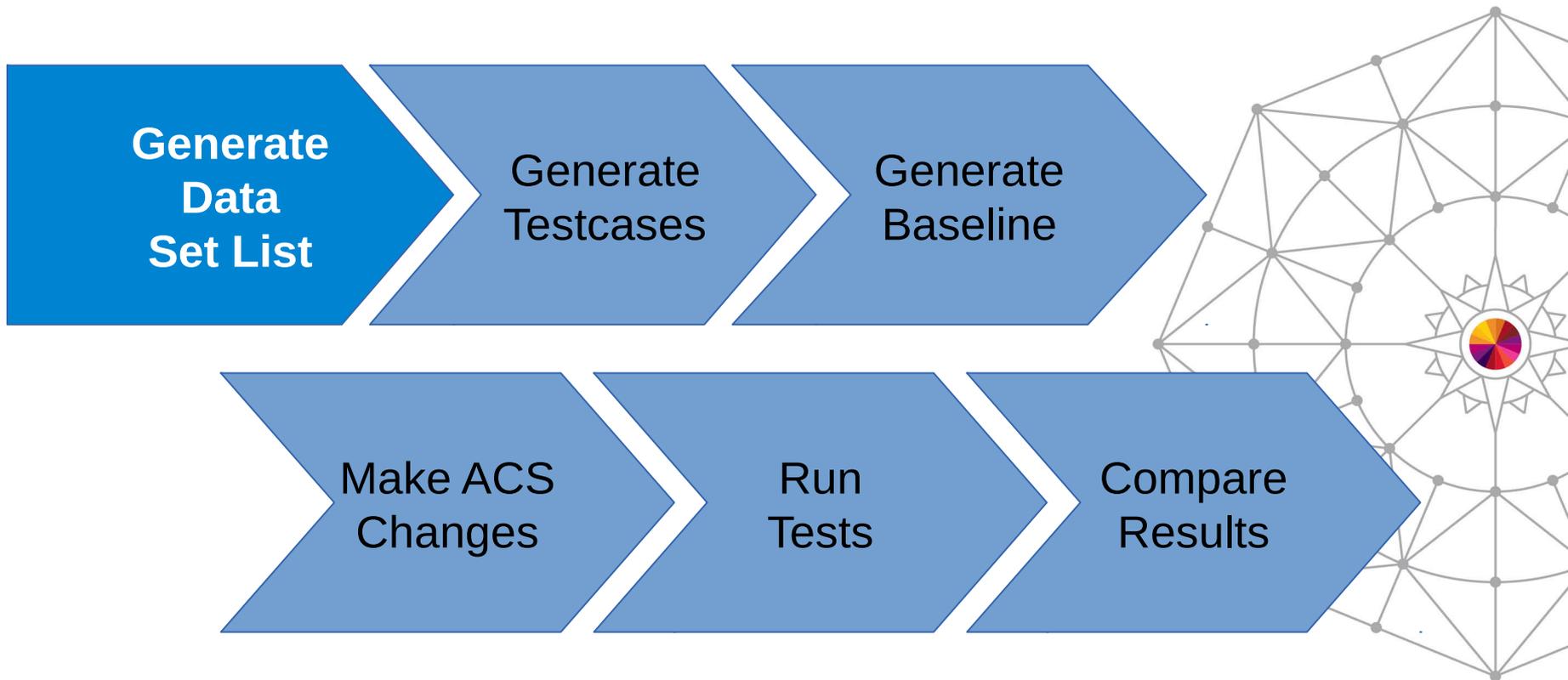


Demonstrations and Details:

- Using COPYFILT
- Using model command generation
- **Building and use ACS test cases**
- Generating a volume report
- Adding a set of volumes to a Storage Group
- Generating a new data class

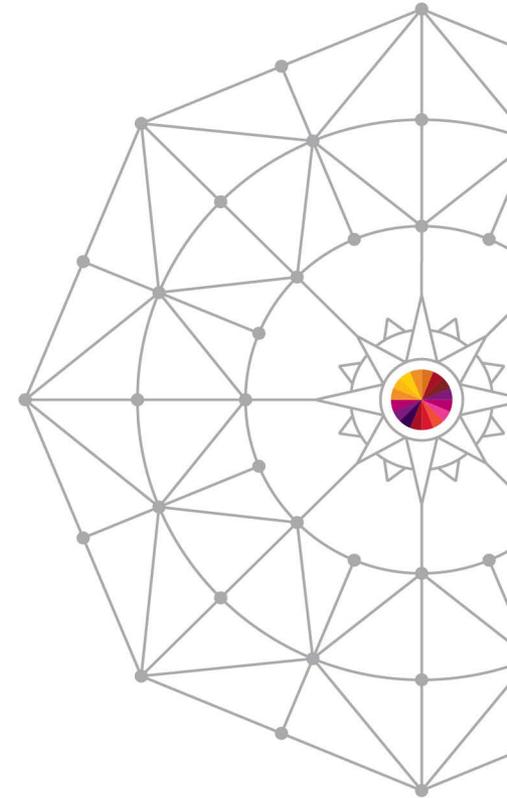


ACS Testing - Process



ACS Testing – Generating a Data Set List

- Gather Data
 - **ISMF – easy to use**
 - DCOLLECT – faster than ISMF
 - SMF – ACS exit, good for temporary data
 - VMA – good only for tape data
- Use NaviQuest to generate test cases
- Generate 'Baseline'



ACS Testing - Generate Data Set List

```

.      ISMF PRIMARY OPTION MENU - z/OS DFSMS V1 R13
.
.  0  ISMF Profile          - Specify ISMF User Profile
.  1  Data Set              - Perform Functions Against Data Sets
.  2  Volume                - Perform Functions Against Volumes
.  3  Management Class     - Specify Data Set Backup and Migration Criteria
.

```

```

.  Panel Defaults Utilities Scroll Help
.  -----
.  DATA SET SELECTION ENTRY PANEL                               Page 1 of 5
.
.  For a Data Set List, Select Source of Generated List . . 2 (1 or 2)
.
.  1  Generate from a Saved List                                Query Name To
.      List Name . . . _____ Save or Retrieve _____
.
.  2  Generate a new list from criteria below
.      Data Set Name . . . 'NB.**'
.      Enter "/" to select option          Generate Exclusive list
.      Specify Source of the new list . . 2 (1 - VTDC, 2 - Catalog)
.      1 Generate list from VTDC
.          Volume Serial Number . . . _____ (fully or partially specified)
.          Storage Group Name . . . _____ (fully specified)
.      2 Generate list from Catalog
.          Catalog Name . . . _____
.          Volume Serial Number . . . _____ (fully or partially specified)
.          Acquire Data from Volume . . . . . Y (Y or N)
.          Acquire Data if DFSMSHsm Migrated . . Y (Y or N)
.
.  Use ENTER to Perform Selection; Use DOWN Command to View next Selection Panel;
.  Use HELP Command for Help; Use END Command to Exit.
.

```

ACS Testing – Generate DS List

```

Panel  List  Dataset  Utilities  Scroll  Help
-----
Enter Line Operators below:

                                DATA SET LIST
                                Entries 1-8 of 8
                                Data Columns 4-6 of 42

LINE          DATA SET NAME          ALLOC   % NOT   COMPRESSED
OPERATOR      (2)          USED    USED    FORMAT
---(1)-----  -----(4)-----  ---(5)-  ---(6)----
                NB.RLS.TEST1          -----  ---
                NB.RLS.TEST1.DATA      810K    0      ---
                NB.RLS.TEST1.INDEX      1K      96     ---
                NB.SMS.TESTA           55K     93     NO
                NB.SMS.TESTB           55K     93     NO
                NB.SMS.TESTOUT          55K     99     NO
                NB.SMSN.TEST1           55K     93     ---
                NB.SMSN.TEST2           55K     93     ---
-----  -----  -----  -----  -----
                BOTTOM OF DATA

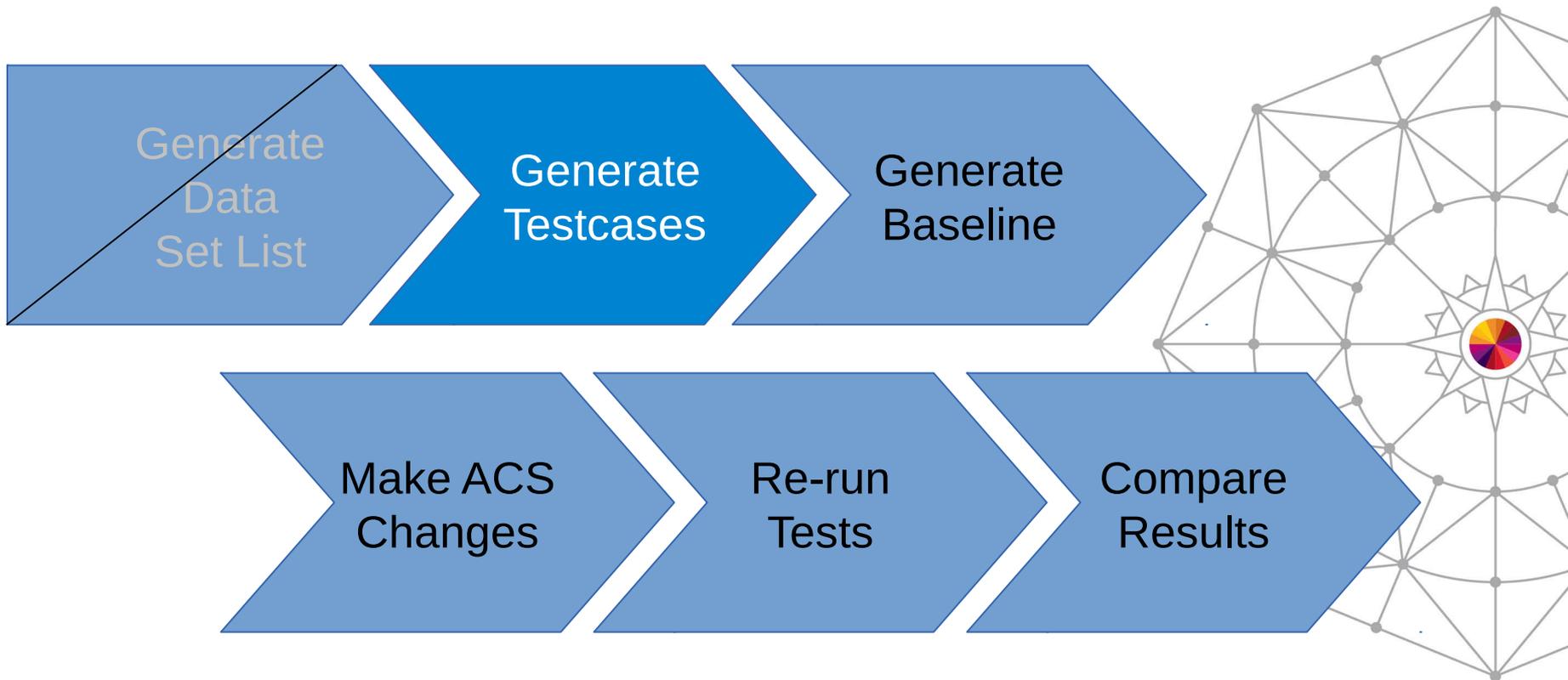
Command ==> SAVE NBFILS _

                                Scroll ==> HALF

```

* Note: you can see and edit your saved lists from ISMF Option L (LISTS)

ACS Testing - Process



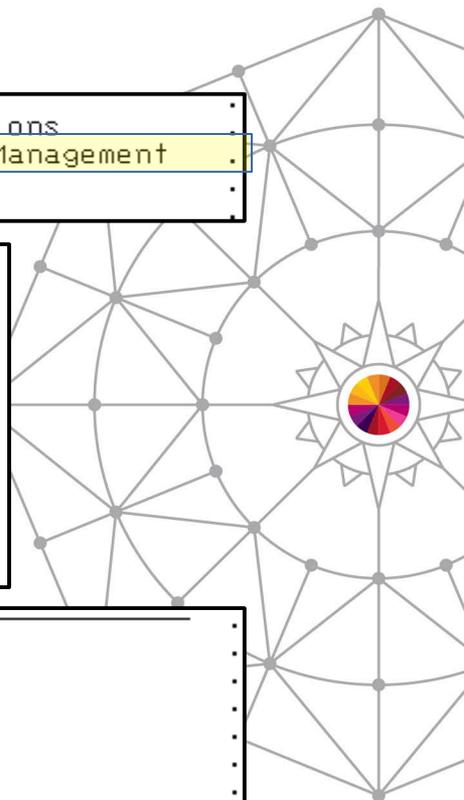
ACS Testing – Generate Testcases

- ISMF 11.1.1 – NaviQuest generate

```
. 9 Aggregate Group - Specify data set recovery parameters .  
. 10 Library Management - Specify Library and Drive Configurations .  
. 11 Enhanced ACS Management - Perform Enhanced Test/Configuration Management .  
. C Data Collection - Process Data Collection Function .  
. G Report Generation - Create Storage Management Reports .
```

```
. ENHANCED ACS MANAGEMENT - NaviQuest PRIMARY OPTION MENU  
. Select one of the following options and press Enter:  
. 1 Test Case Generation  
. 2 ACS Test Listings Comparison  
. 3 Enhanced ACS Test Listing  
. 4 Test Case Update with Test Results  
. 5 SMS Report Generation  
. 6 Model Commands Generation  
. 7 Batch Testing/Configuration Management  
. X Exit
```

```
. TEST CASE GENERATION SELECTION MENU  
. Select the input data to be used and press Enter:  
. 1 Saved ISMF List  
. 2 DCOLLECT Data  
. 3 SMF Data  
. 4 VMA Extract Data
```



ACS Testing – Generate Testcases

```

Panel Help
-----
TEST CASE GENERATION FROM SAVED ISMF LIST                               Top of data

To generate test cases, specify the following information and press Enter:
Saved ISMF List . . . . . NBFILES (Data set list)
Member Name Prefix . . . . . NB (1 to 4 alpha characters)
Test Case PDS . . . . . 'NEAL.SMS.ACSTST'
Replace Existing Prefix . . . . . N (Y or N)
-----
ACS Test Case Variables:
Applic . . . . . CICSJOB
Def_dataclas . . . . . _____
Def_storclas . . . . . _____
Group . . . . . _____
Label . . . . . _____
Pgm . . . . . _____
Retpd . . . . . _____
DD . . . . . _____
Def_mgmtclas . . . . . _____
Filenum . . . . . _____
Job . . . . . _____
Libname . . . . . _____
Storgrp . . . . . _____
Sysplex . . . . . _____
More: +

Use DOWN Command to Scroll Forward; Use UP Command to Scroll Backward;
Use HELP Command for Help; Use END Command to Exit.

```

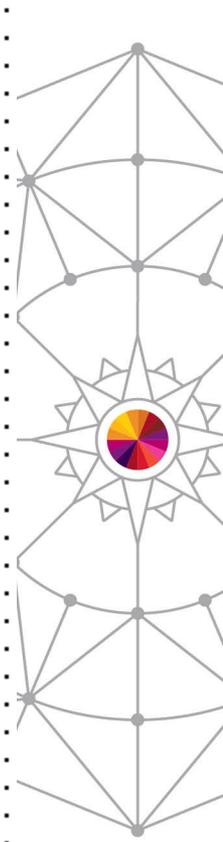
* there is a special prefix – NEVR – for data sets that should never be managed

ACS Testing – Generating Testcases

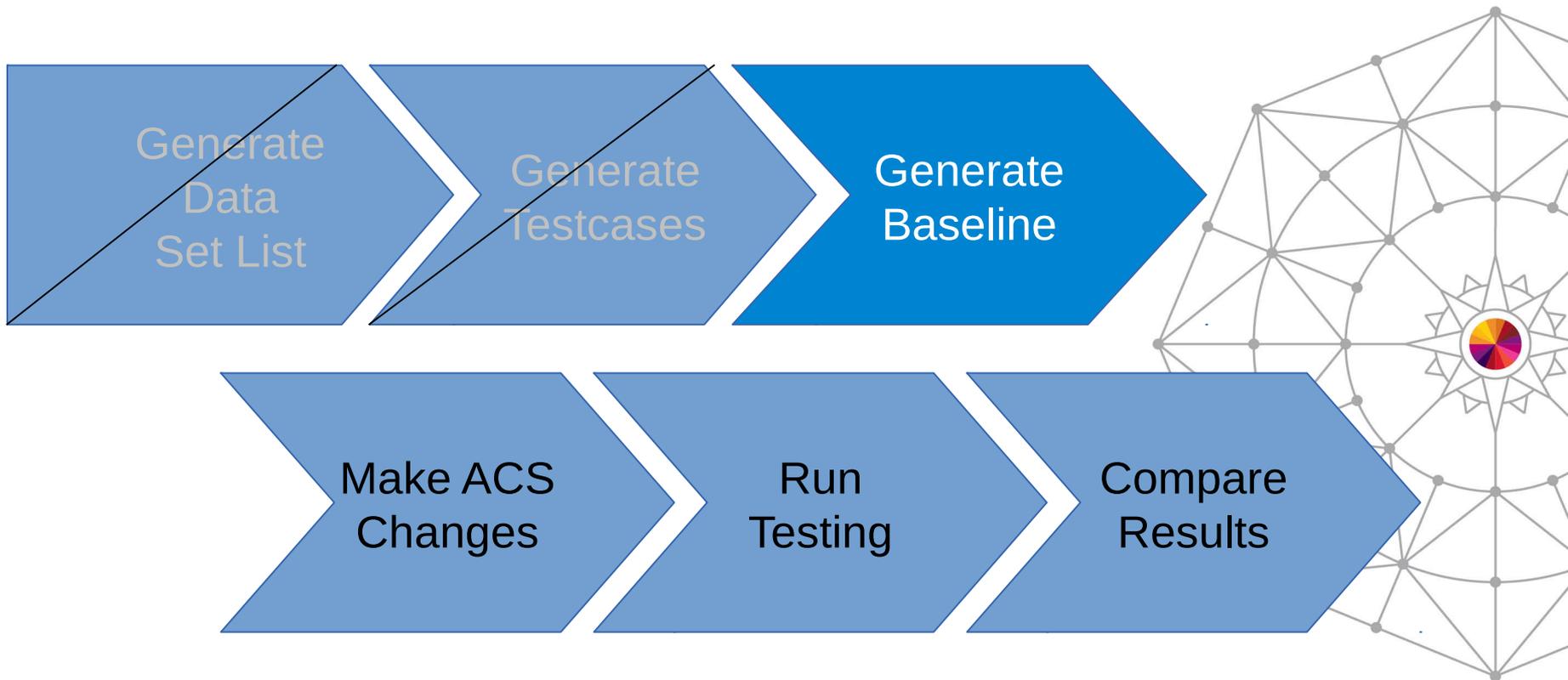
```

.   Menu  Functions  Utilities  Help
.   -----
.   BROWSE      NEAL.SMS.ACSTST      Row 00001 of 00007
.   Name        Prompt          Size    Created      Changed      ID
.   . NB1
.   . NB2
.   . NB3
.   . NB4
.   . NB5
.   . NB6
.   . NB7
.   **End**
.
.
.   Command ==>
.   F1=Help      F2=Split  F3=Exit    F5=Rfind   F7=Up      F8=Down   F9=Swap
.   F10=Left     F11=Right F12=Cancel
.
.   Menu  Utilities  Compilers  Help
.   -----
.   BROWSE      NEAL.SMS.ACSTST(NB1)      Line 00000000 Col 001 080
.   ***** Top of Data *****
.   DESCRIPTION1:
.   TEST CASE CREATED 2013/08/09 AT 13:11 BY USER2
.   DSN: NB.RLS.TEST1.DATA
.   DSTYPE: PERM
.   ACSENVIR: ALLOC
.   MAXSIZE: 13280
.   DSORG: VS
.   SIZE: 830
.   NVOL: 1
.   VOL: 01
.   XP0403
.   APPLIC: CICSJOB
.   UNIT: 3390
.   ***** Bottom of Data *****

```



ACS Testing - Process



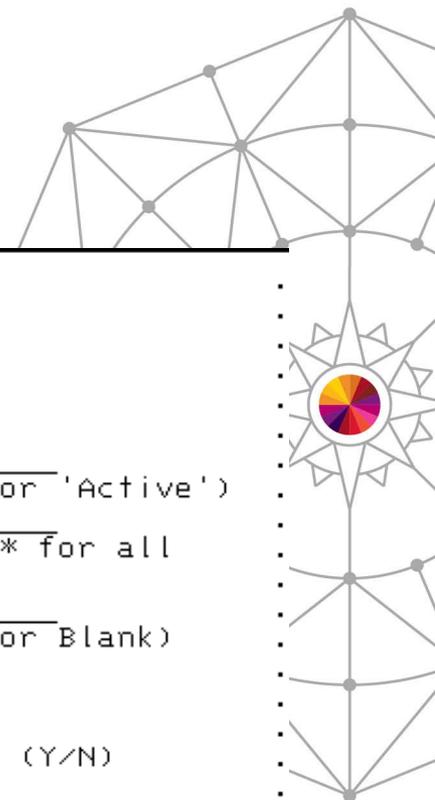
ACS Testing – Generate Baseline

- Simply run the tests and save the output
- ISMF 7.4.3 (Automatic Class Selection, Test ACS Routines, Test)

```

.   Panel  Utilities  Help
.
.                               TEST ACS ROUTINES
.
.   To Perform ACS Testing, Specify:
.
.   CDS Name . . . . . 'NEAL.SMS.SCDS'
.                               (1 to 44 Character Data Set Name or 'Active')
.   ACS Test Library . . 'NEAL.SMS.ACSTST'
.   ACS Test Member . . NB*_____ (fully or partially specified or * for all
.                               members)
.   Listing Data Set . . 'NEAL.SMS.BASELINE'
.                               (1 to 44 Character Data Set Name or Blank)
.
.   Select which ACS Routines to Test:
.
.   DC ==> Y (Y/N)  SC ==> Y (Y/N)  MC ==> Y (Y/N)  SG ==> Y (Y/N)
.

```



ACS Testing – Generate Baseline

```
BROWSE      NEAL.SMS.BASELINE
***** Top of Data *****
```

ACS TESTING RESULTS

```
CDS NAME      : NEAL.SMS.SCDS
ACS ROUTINE TYPES: DC SC MC SG
ACS TEST LIBRARY : NEAL.SMS.ACSTST
```

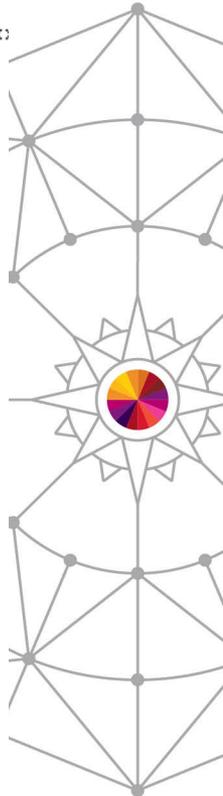
```
ACS TEST
MEMBER      EXIT CODE  RESULTS
-----
```

```
DESCRIPTION: TEST CASE CREATED 2013/08/09 AT 13:11 BY USER2
EXPECTED RESULT:
```

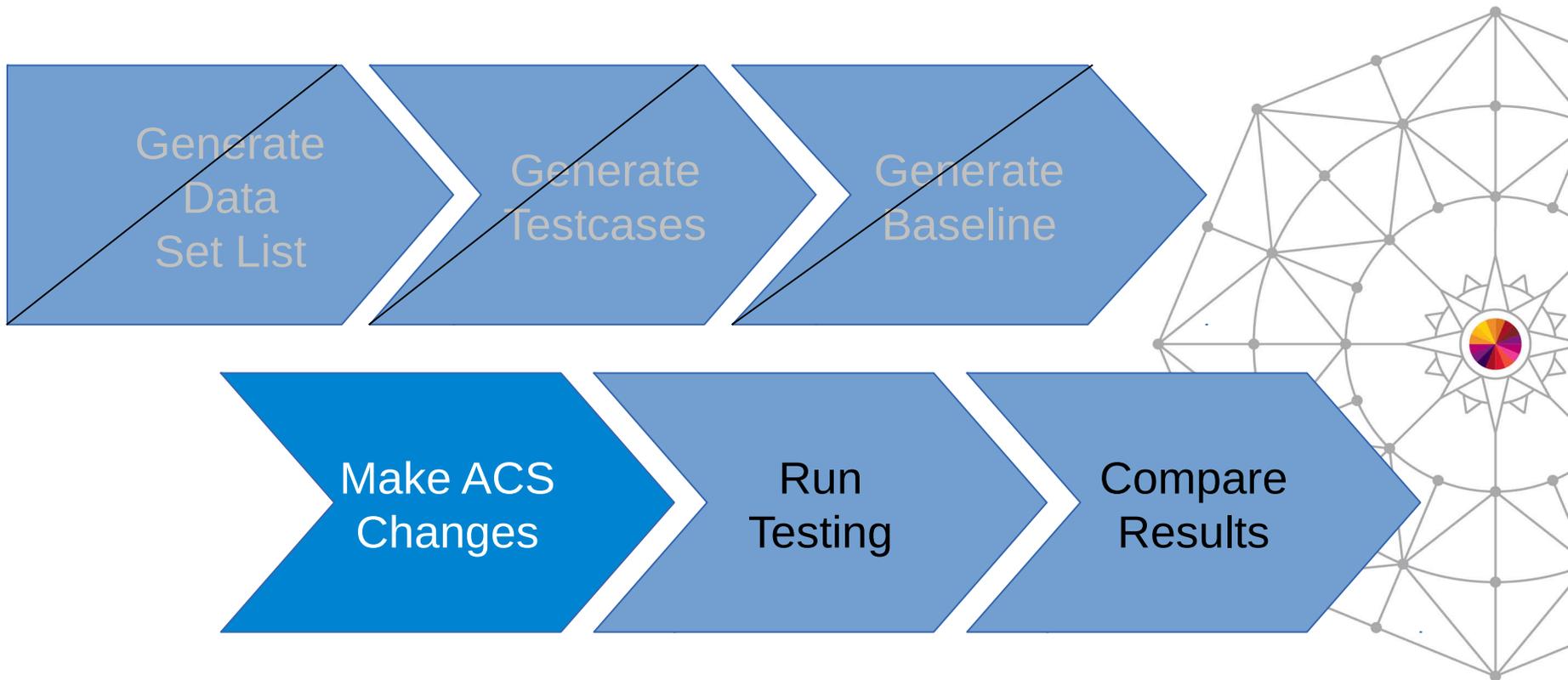
```
NB1
MSG : DATACLAS=RLS      0  DC = RLS
MSG : STORCLAS=RLS      0  SC = RLS
MSG : STORCLAS=RLS      0  MC = NULL VALUE ASSIGNED
MSG : STORCLAS=RLS      0  SG = SG1
```

```
DESCRIPTION: TEST CASE CREATED 2013/08/09 AT 13:11 BY USER2
EXPECTED RESULT:
```

```
NB2
MSG : DATACLAS=RLS      0  DC = RLS
MSG : STORCLAS=RLS      0  SC = RLS
MSG : STORCLAS=RLS      0  MC = NULL VALUE ASSIGNED
MSG : STORCLAS=RLS      0  SG = SG1
```

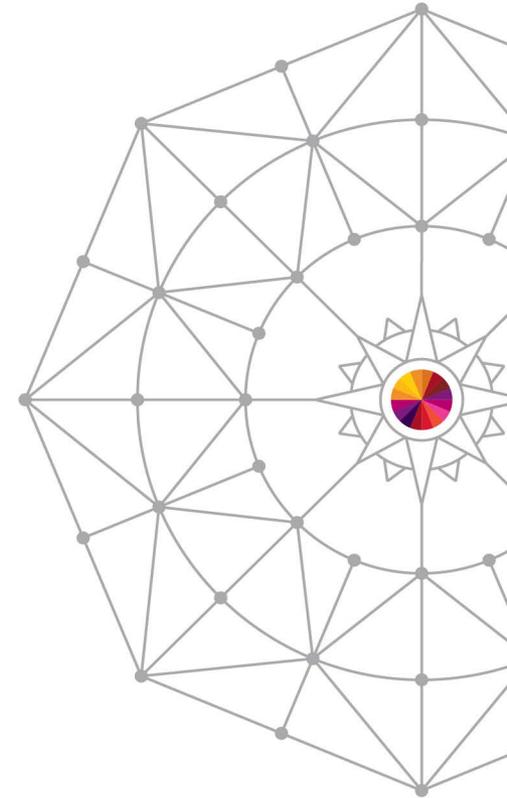


ACS Testing - Process

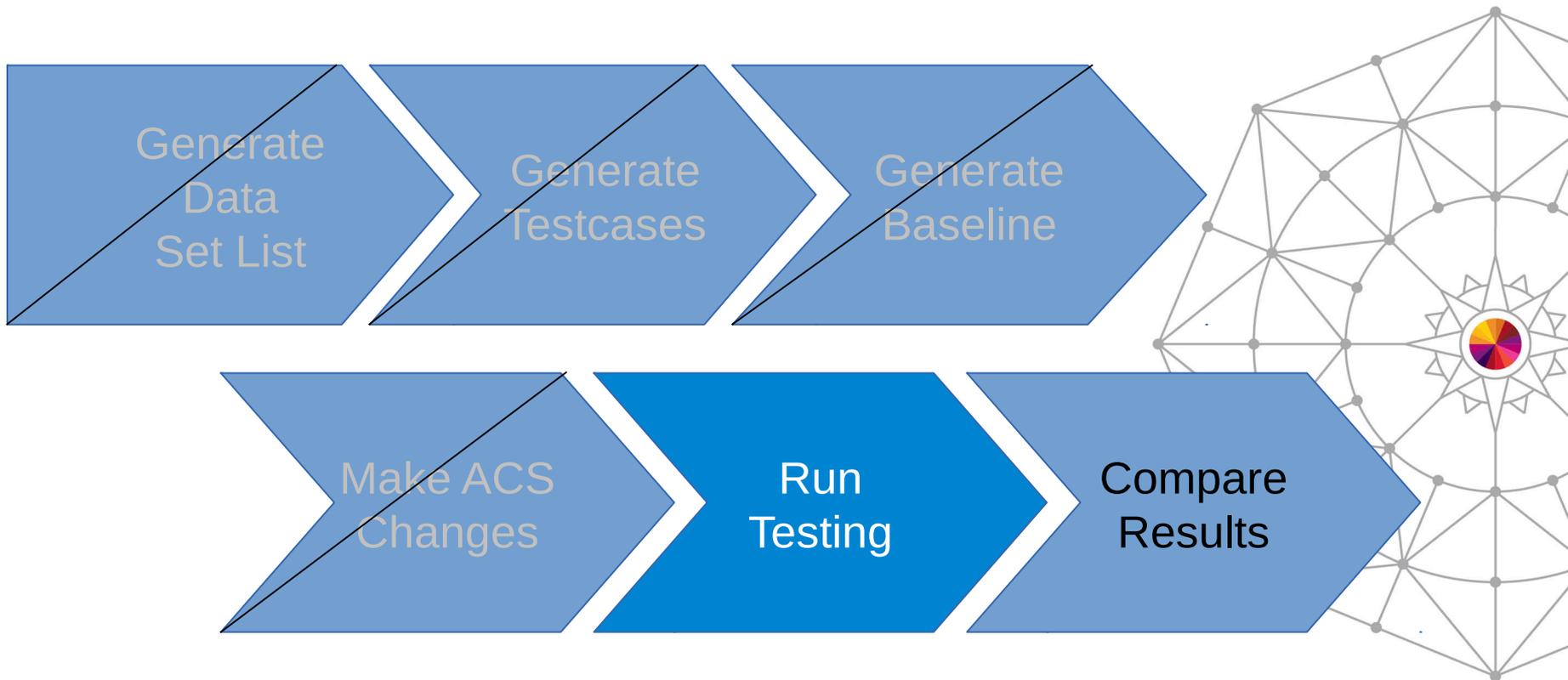


Make Changes to ACS

- Make changes to your ACS
 - Recommended that you make changes in a COPY
 - Or keep a backup
- Remember to translate and validate!
 - ISMF 7.2 and 3
 - Can translate into a testing SCDS if you prefer
- For the demo, I've changed this line:
 - From: `WHEN(&RLS) SET &STORCLAS = 'RLS'`
 - To : `WHEN(&RLS) SET &STORCLAS = 'SMS'`



ACS Testing - Process



ACS Testing – Run Tests Again

```
BROWSE      NEAL.SMS.NEWCFG
***** Top of Data *****
                ACS TESTING RESULTS
```

```
CDS NAME      : NEAL.SMS.SCDS
ACS ROUTINE TYPES: DC SC MC SG
ACS TEST LIBRARY : NEAL.SMS.ACSTST
```

```
ACS TEST
MEMBER      EXIT CODE  RESULTS
-----
```

```
DESCRIPTION: TEST CASE CREATED 2013/08/09 AT 13:11 BY USER2
EXPECTED RESULT:
```

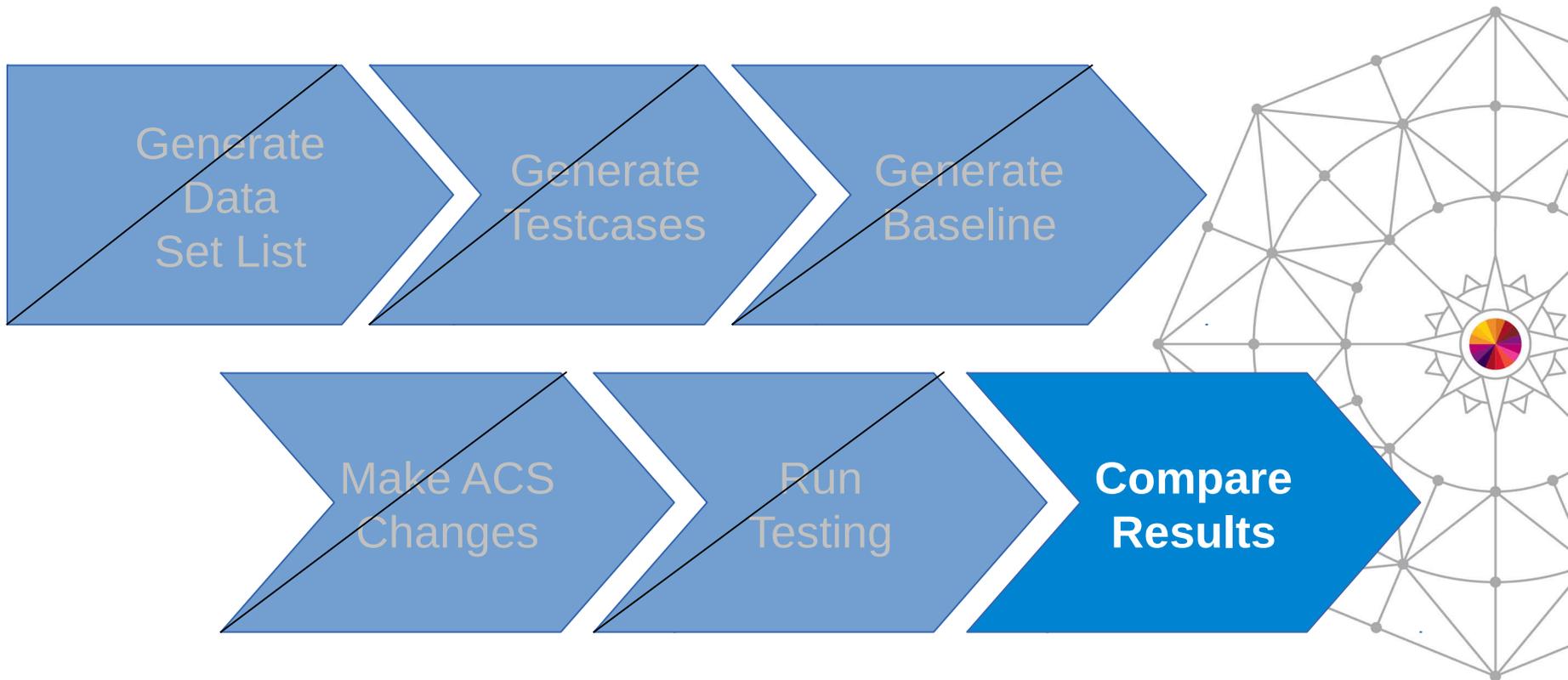
```
NB1
  MSG : DATACLAS=RLS      0  DC = RLS
      MSG : STORCLAS=SMS   0  SC = SMS
      MSG : STORCLAS=SMS   0  MC = NULL VALUE ASSIGNED
                        0  SG = SG1
```

```
DESCRIPTION: TEST CASE CREATED 2013/08/09 AT 13:11 BY USER2
EXPECTED RESULT:
```

```
NB2
  MSG : DATACLAS=RLS      0  DC = RLS
      MSG : STORCLAS=SMS   0  SC = SMS
      MSG : STORCLAS=SMS   0  MC = NULL VALUE ASSIGNED
                        0  SG = SG1
```



ACS Testing - Process



ACS Testing – Compare Results

- ISMF Option 11.2
(NaviQuest ACS Testing Listing Comparison)

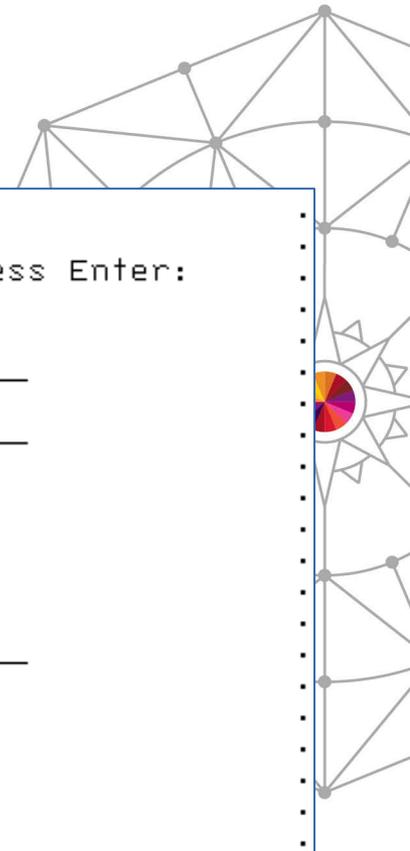
```

                                ACS TEST LISTINGS COMPARISON ENTRY PANEL

To compare ACS listings, specify the following information and press Enter:
Input Data Sets:
  Base ACS Test Listing (Before latest ACS routine changes)
  ===> 'NEAL.SMS.BASELINE'
  _____
  New ACS Test Listing (After latest ACS routine changes)
  ===> 'NEAL.SMS.NEWCFG'
  _____
Reference Data Set for Compare:
  Test Case PDS (Test source for listings above)
  ===> 'NEAL.SMS.ACSTST'
  _____

Output Data Sets:
  Comparison Results Data Set (Summary of exception test cases)
  ===> 'NEAL.SMS.EXPT'
  _____
  Replace Contents if DSN Exists . . . Y (Y or N)
  Exception Test Case PDS (Contents of exception test cases)
  ===> 'NEAL.SMS.EXPTC'
  _____
  Replace Contents if DSN Exists . . . Y (Y or N)

Use HELP Command for Help; Use END Command to Exit.
  
```



ACS Testing – Compare Results

```

BROWSE      NEAL.SMS.EXPT
***** Top of Data *****
                ACS TEST LISTINGS COMPARISON REPORT

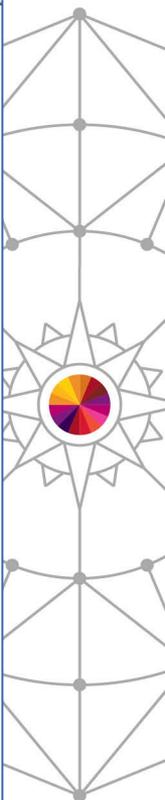
Base ACS listing      :   NEAL.SMS.BASELINE
New ACS listing       :   NEAL.SMS.NEWCFG
Testcase dataset     :   NEAL.SMS.ACSTST
Exception dataset    :   NEAL.SMS.EXPTC

TESTCASE MEMBER : NB1
                * * * * E X C E P T I O N * * * *
                RC DATACLAS      RC STORCLAS      RC MGMTCLAS      RC STORGRP
                -----
BASE           0 RLS              0 RLS              0 NULL            0 SG1
NEW           0 RLS              0 SMS              0 NULL            0 SG1

                DSN: NB.RLS.TEST1.DATA
                SIZE: 830
                VOL: XP0403
                UNIT: 3390

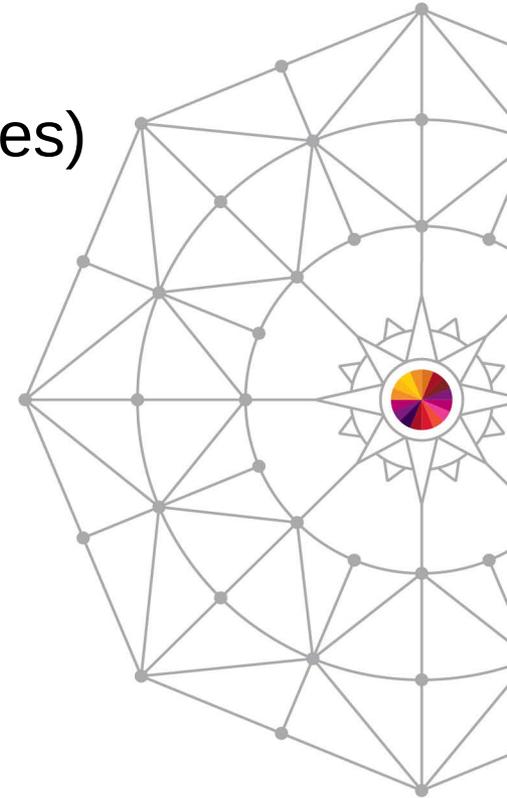
TESTCASE MEMBER : NB2
                * * * * E X C E P T I O N * * * *
                RC DATACLAS      RC STORCLAS      RC MGMTCLAS      RC STORGRP
                -----
BASE           0 RLS              0 RLS              0 NULL            0 SG1
NEW           0 RLS              0 SMS              0 NULL            0 SG1

                DSN: NB.RLS.TEST1.INDEX
                SIZE: 55
                VOL: XP0403
                UNIT: 3390
    
```



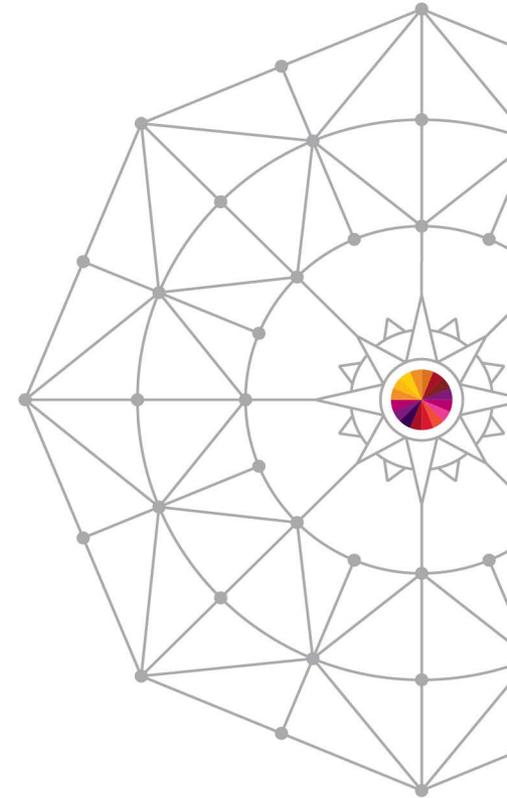
ACS Testing - Summary

- Build test cases from data set lists
- Develop a suite of test cases (different prefixes)
- Run the entire suite on any changes – verify results
- ISMF 11.4 – Update test cases with new expected results
 - Updates test cases so that they know what to expect

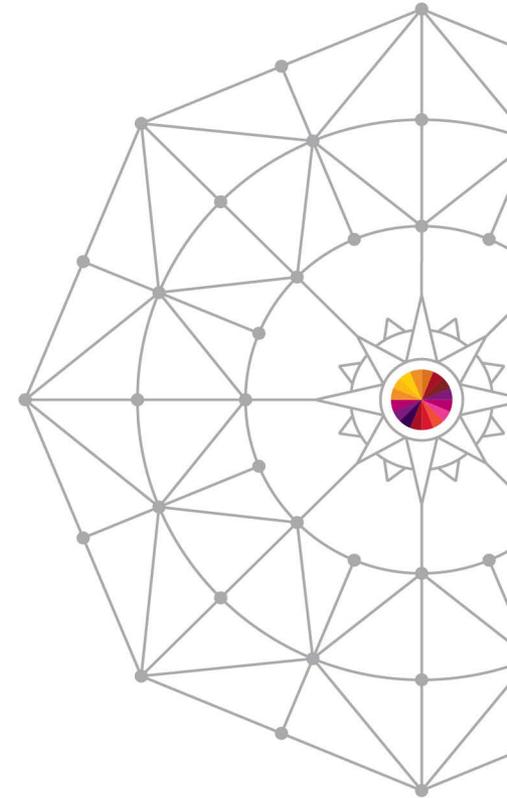


ACS Testing – Practical Considerations

- One test case per data set in list
- Number limited by PDS that holds them
- Testing will hold your console
- You probably have a lot of data sets
- Solution:
 - Logically group your data
 - Don't test for everything – just a subset
 - Create different test case libraries depending on your needs

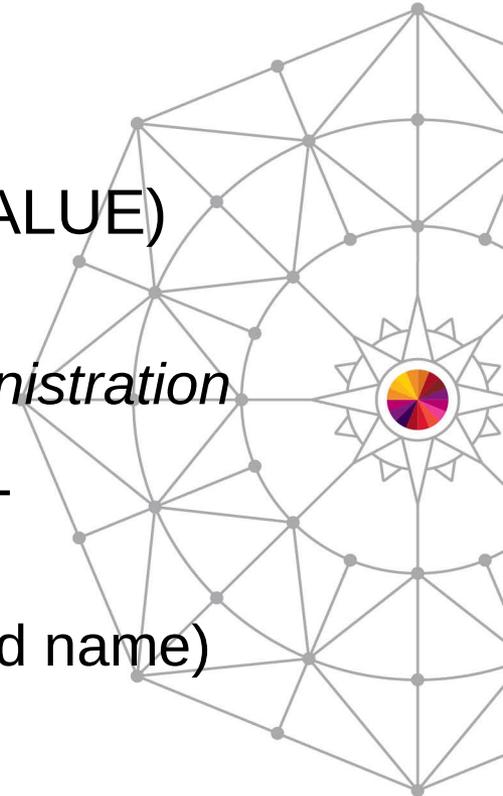


Now via Batch



NaviQuest Batch

- Same functions, different interface
- Plenty of sample JCL exists – start there
- Controlled by parameters of format PARM(VALUE)
 - Well-documented in JCL Comments
 - Also documented in *DFSMSdfp Storage Administration*
- CLISTS and JCL stored in SYS1.SACBCNTL
 - EXEC ACBJBAOB
 - Specific CLIST called via ISPSTART CMD(cmd name)



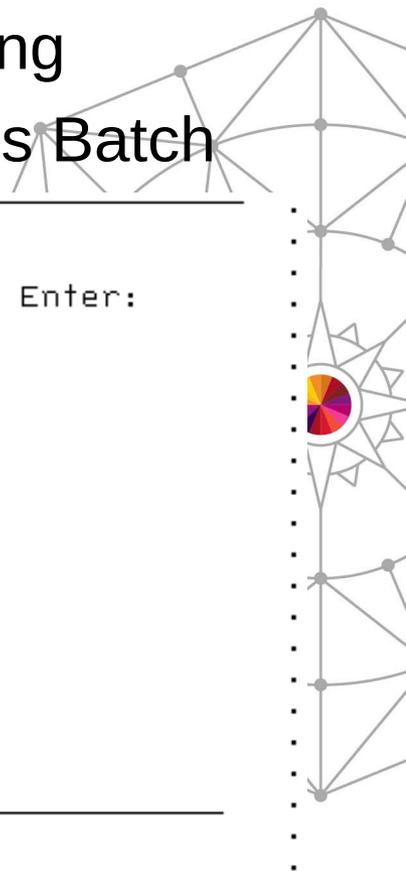
ACS Testing in Batch

- ISMF 11.7 Gives Sample JCL for batch processing
- ACS Testing is in 11.7.3 – Configuration Changes Batch

```

:          CONFIGURATION CHANGES BATCH SAMPLES SELECTION MENU
:
: Select an option by typing '/' or enter Data Set to Edit and press Enter:
:
:                                     More:  -
:
: Validate SCDS
:  -- Test ACS Routines
:  -- Generate Enhanced ACS Test Listing
:  -- Compare ACS Test Listings
:  -- Update Test Cases with Test Results
:  -- Delete Management Class
:  -- Delete Data Class
:  -- Delete Storage Class
:  -- Delete Storage Group
:  -- Delete Copy Pool
:  -- Delete Aggregate Group
:  -- Delete Tape Library
:
: Data Set to Edit . . _____
:
: Use HELP Command for Help; Use END Command to Exit.

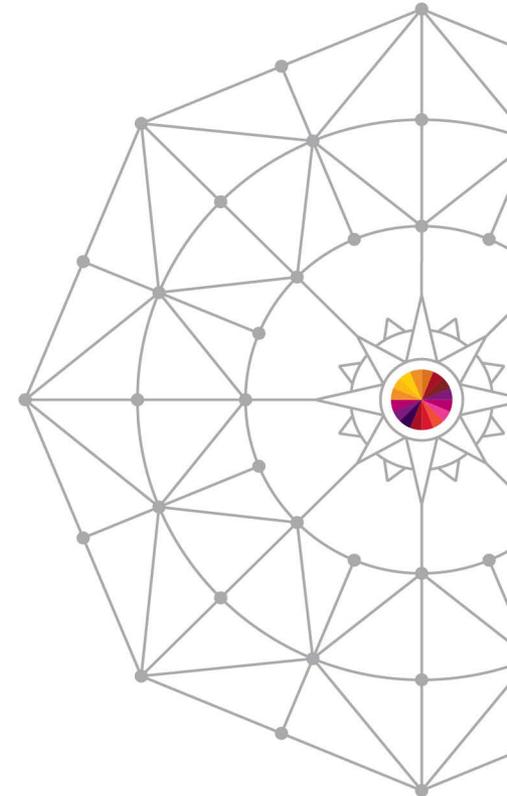
```



ACS Testing in Batch - Testing

```

000041 //*****
000042 //*
000043 //* TEST STEP
000044 //*
000045 //* SCDS - NAME OF SCDS THAT CONTAINS THE TRANSLATED,
000046 //* VALIDATED ACS ROUTINES TO BE TESTED (INPUT)
000047 //* TESTBED - PDS CONTAINING TEST CASES THAT THE ACS ROUTINES
000048 //* SHOULD BE TESTED FOR (INPUT)
000049 //* MEMBER - MEMBERS TO BE TESTED IN TESTBED (INPUT)
000050 //* DC,SC,MC,SG - ROUTINES TO BE TESTED Y OR N (INPUT)
000051 //* LISTNAME - TEST LISTING (OUTPUT)
000052 //*
000053 //*****
000054 //*****
000055 //TESTACS EXEC ACBJBAOB,
000056 // PLIB1='SYS1.DGTPLIB',
000057 // TABL2=userid.TEST.ISPTABL
000058 //SYSTSIN DD *
000059 PROFILE PREFIX(IBMUSER)
000060 DEL NEW.TESTLIST
000061 ISPSTART CMD(ACBQBAIA +
000062 SCDS(MYSCDS) +
000063 TESTBED(TESTCASE.LIBRARY) MEMBER(*) +
000064 LISTNAME(NEW.TESTLIST) +
000065 DC(Y) SC(Y) MC(Y) SG(Y)) +
000066 NEWAPPL(DGT) BATSCRW(132) BATSCRD(27) BREDIMAX(3) BDISPMAX(99999999)
000067 /*
  
```



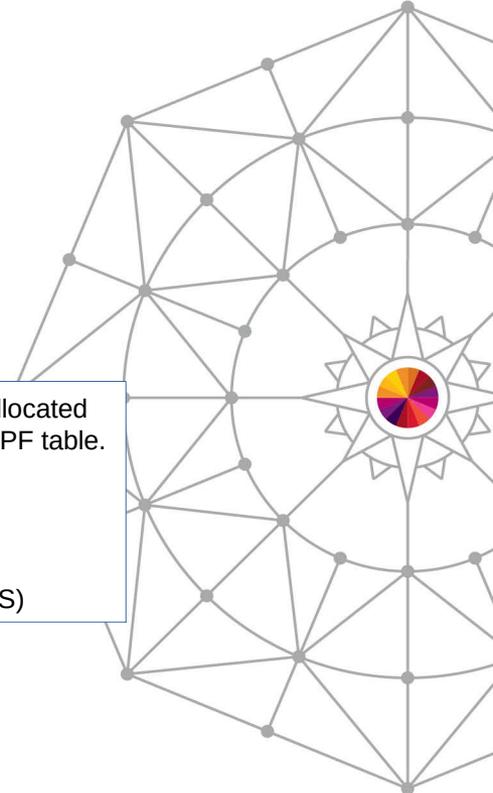
ACS Testing in Batch - Testing

```

000041 //*****
000042 //*
000043 //* TEST STEP
000044 //*
000045 //* SCDS - NAME OF SCDS THAT CONTAINS THE TRANSLATED, @D1C*
000046 //* VALIDATED ACS ROUTINES TO BE TESTED (INPUT)
000047 //* TESTBED - PDS CONTAINING TEST CASES THAT THE ACS ROUTINES
000048 //* SHOULD BE TESTED FOR (INPUT)
000049 //* MEMBER - MEMBERS TO BE TESTED IN TESTBED (INPUT)
000050 //* DC,SC,MC,SG - ROUTINES TO BE TESTED Y OR N (INPUT)
000051 //* LISTNAME - TEST LISTING (OUTPUT)
000052 //*
000053 //*****
000054 //*****
000055 //TESTACS EXEC ACBJBAOB,
000056 // PLIB1='SYS1.DGTPLIB',
000057 // TABL2=NEAL.SMS.ISPTABL
000058 //SYSTSIN DD *
000059 PROFILE PREFIX(USER2)
000060 DEL 'NEAL.SMS.NEW.TESTLIST'
000061 ISPSTART CMD(ACBQBAIA +
000062 SCDS('NEAL.SMS.SCDS') +
000063 TESTBED('NEAL.SMS.ACSTST') MEMBER(*) +
000064 LISTNAME('NEAL.SMS.NEW.TESTLIST') +
000065 DC(Y) SC(Y) MC(Y) SG(Y)) +
000066 NEWAPPL(DGT) BATSCRW(132) BATSCRD(27) BREDIMAX(3) BDISPMAX(99999999)
000067 /*
  
```

TABL2 must be allocated
It is a standard ISPF table.

PDS Dataset
RECFM=FB
LRECL=80
DSORG=PO (PDS)



ACS Testing in Batch - Results

```
ISPSTART CMD(ACBQBAIA SCDS('NEAL.SMS.SCDS') TESTBED('NEAL.SMS.ACSTST') MEMBER(*) LISTNAME('NEAL.SMS.NEW.TESTLIST') DC(Y) SC(Y) MC(Y)
SG(Y)) NEWAPPL(DGT) BATSCRW(132) BATSCRD(27) BREDIMAX(3) BDISPMAX(99999999)
Library containing test cases was: 'NEAL.SMS.ACSTST'
Members tested were: *
SCDS tested against was: 'NEAL.SMS.SCDS'
Output listing for test was: 'NEAL.SMS.NEW.TESTLIST'
Value of Command was: ISPSTART CMD(ACBQBAIA SCDS('NEAL.SMS.SCDS') TESTBED('NEAL.SMS.ACSTST') MEMBER(*) LISTNAME('NEAL.SMS.NEW.TESTL
IST') DC(Y) SC(Y) MC(Y) SG(Y)) NEWAPPL(DGT)
USER2.NAVIQ.JOB00023.D0000105.? was preallocated (no free was done).
READY
END
```

Time	*** ISPF transaction log ***		Userid: USER2	Date: 13/08/09	Page: 1
14:40	Start of ISPF Log	- - - - Session # 1	-----		
14:40	TSO	- Command - - ACBQBAIA SCDS('NEAL.SMS.SCDS') TESTBED('NEAL.SMS.ACSTST') MEMBER(*)			
14:40		LISTNAME('NEAL.SMS.NEW.TESTLIST') DC(Y) SC(Y) MC(Y) SG(Y)			
14:40	TSO	- Command - - ACBQBAIA SCDS('NEAL.SMS.SCDS') TESTBED('NEAL.SMS.ACSTST') MEMBER(*)			
14:40		LISTNAME('NEAL.SMS.NEW.TESTLIST') DC(Y) SC(Y) MC(Y) SG(Y)			
14:40	TSO	- Command - - ACBQBAIA SCDS('NEAL.SMS.SCDS') TESTBED('NEAL.SMS.ACSTST') MEMBER(*)			
14:40		LISTNAME('NEAL.SMS.NEW.TESTLIST') DC(Y) SC(Y) MC(Y) SG(Y)			
14:40	TSO	- Command - - ACBQBAIA SCDS('NEAL.SMS.SCDS') TESTBED('NEAL.SMS.ACSTST') MEMBER(*)			
14:40		LISTNAME('NEAL.SMS.NEW.TESTLIST') DC(Y) SC(Y) MC(Y) SG(Y)			
14:40	End of ISPF Log	- - - - Session # 1	-----		
		ACS TESTING RESULTS	TIME 14:40:10	DATE 08/09/2013	PAGE 0001

```
CDS NAME      : NEAL.SMS.SCDS
ACS ROUTINE TYPES: DC SC MC SG
ACS TEST LIBRARY : NEAL.SMS.ACSTST
```

ACS TEST MEMBER	EXIT CODE	RESULTS

DESCRIPTION: TEST CASE CREATED 2013/08/09 AT 13:11 BY USER2		
EXPECTED RESULT:		
NB1	0	DC = RLS
MSG : DATACLAS=RLS	0	SC = SMS

ACS Testing in Batch

- ISMF 11.7 Gives Sample JCL for batch processing
- ACS Testing is in 11.7.3 – Configuration Changes Batch

```

:                                     CONFIGURATION CHANGES BATCH SAMPLES SELECTION MENU
:
: Select an option by typing '/' or enter Data Set to Edit and press Enter:
:
:                                     More:      -
:
: Validate SCDS
:  -- Test ACS Routines
:  -- Generate Enhanced ACS Test Listing
:  -- Compare ACS Test Listings
:  -- Update Test Cases with Test Results
:  -- Delete Management Class
:  -- Delete Data Class
:  -- Delete Storage Class
:  -- Delete Storage Group
:  -- Delete Copy Pool
:  -- Delete Aggregate Group
:  -- Delete Tape Library
:
: Data Set to Edit . . _____
:
: Use HELP Command for Help; Use END Command to Exit.

```

ACS Testing in Batch – Compare job

```

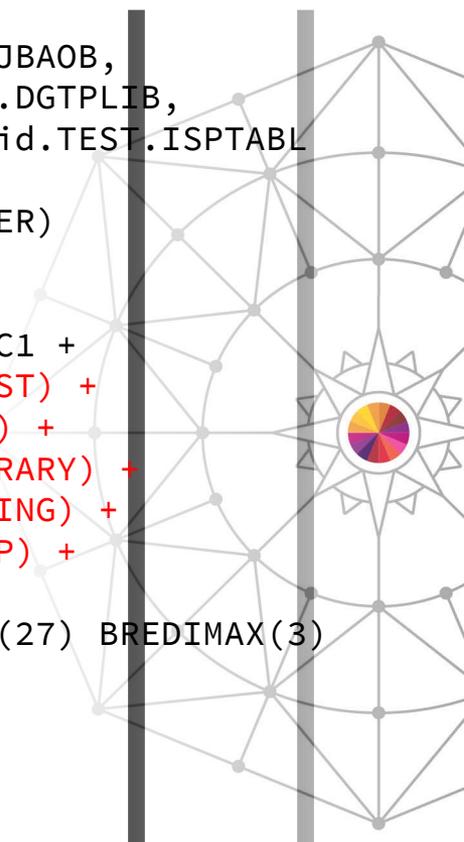
• //*****
• //*
• //* SAMPLE JCL TO COMPARE ACS TEST LISTINGS IN BATCH
• //*
• //* INSTRUCTIONS BEFORE SUBMITTING:
• //*
• //* CHANGE JOBCARD
• //* CHANGE PREFIX
• //* CHANGE PARAMETERS
• //*
• //* PARAMETERS:
• //*
• //* BASELIST - BASE ACS TEST LISTING (INPUT)
• //* NEWLIST - NEW ACS TEST LISTING (INPUT)
• //* TESTBED - TEST CASE PDS (REFERENCE INPUT)
• //* RSLTDSN - COMPARISON RESULTS DATA SET (OUTPUT)
• //* XCPTPDS - EXCEPTION TEST CASE PDS (OUTPUT)
• //* XCPSPACE - SPACE values of Except DS (Optional) 3a@WA32832*
• //* Values: (Primary Tracks,Secondary Tracks,Directory Blocks) *
• //* which are positional and optional. Defaults: (3,1,20). *
• //*
• //* NOTE: If you receive message IEC217I B14-0C on your exception *
• //* data set, you need to increase your data set size by using *
• //* the XCSPACE parameter (specially the directory blocks) *
• //*
• //*****

```

```

//CMRSTEP EXEC ACBJBAOB,
//          PLIB1=SYS1.DGTPLIB,
//          TABL2=userid.TEST.ISPTABL
//SYSTSIN DD *
PROFILE PREFIX(IBMUSER)
DEL COMPARE.LISTING
DEL TESTCASE.EXCP
ISPSTART CMD(%ACBQBAC1 +
BASELIST(BASE.TESTLIST) +
NEWLIST(NEW.TESTLIST) +
TESTBED(TESTCASE.LIBRARY) +
RSLTDSN(COMPARE.LISTING) +
XCPTPDS(TESTCASE.EXCP) +
XCPSPACE(5,3,30)) +
BATSCRW(132) BATSCRD(27) BREDIMAX(3)
BDISPMAX(99999999)
/*

```



ACS Testing – Compare Results

BROWSE NEAL.SMS.EXPT
 ***** Top of Data *****

ACS TEST LISTINGS COMPARISON REPORT

Base ACS listing : NEAL.SMS.BASELINE
 New ACS listing : NEAL.SMS.NEWCFG
 Testcase dataset : NEAL.SMS.ACSTST
 Exception dataset : NEAL.SMS.EXPTC

TESTCASE MEMBER : NB1

	RC DATACLAS	RC STORCLAS	RC MGMTCLAS	RC STORGRP
BASE	0 RLS	0 RLS	0 NULL	0 SG1
NEW	0 RLS	0 SMS	0 NULL	0 SG1

DSN: NB.RLS.TEST1.DATA
 SIZE: 830
 VOL: XP0403
 UNIT: 3390

TESTCASE MEMBER : NB2

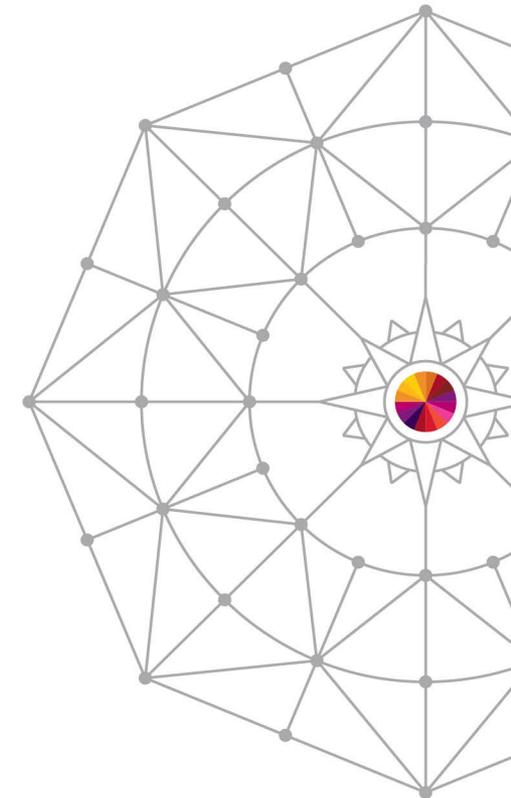
	RC DATACLAS	RC STORCLAS	RC MGMTCLAS	RC STORGRP
BASE	0 RLS	0 RLS	0 NULL	0 SG1
NEW	0 RLS	0 SMS	0 NULL	0 SG1

DSN: NB.RLS.TEST1.INDEX
 SIZE: 55
 VOL: XP0403
 UNIT: 3390



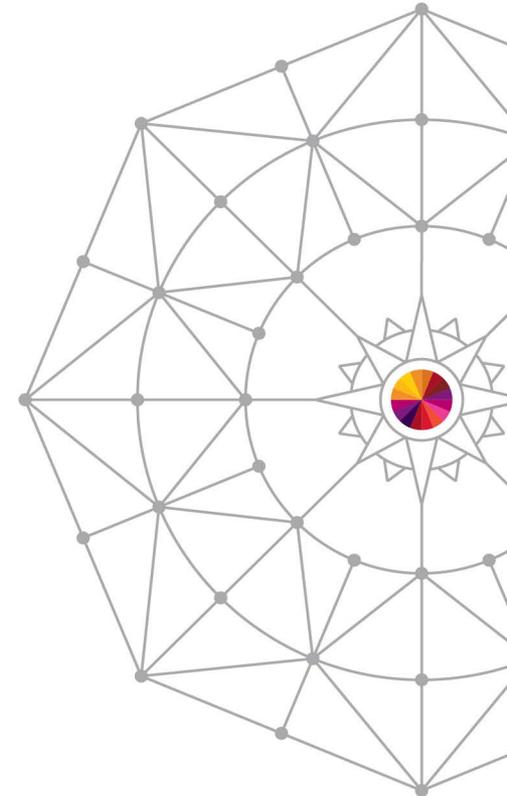
ACS Batch Summary

- Find sample JCL
- Change the necessary parameters
- Submit
- Get work done.



Demonstrations and Details:

- Using COPYFILT
- Using model command generation
- Building and use ACS test cases
- **Generating a volume report**
- Adding a set of volumes to a Storage Group
- Generating a new data class



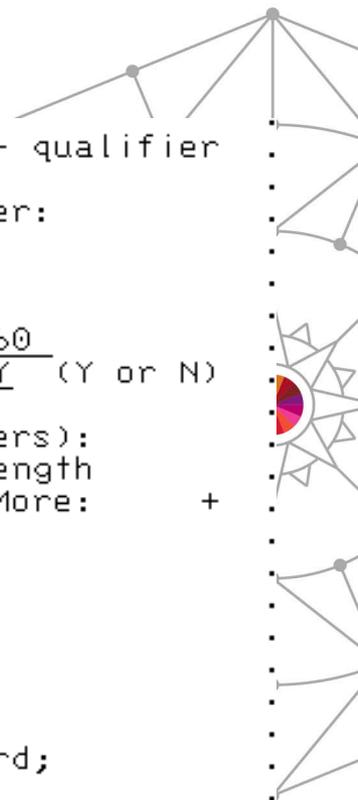
Volume Report

- ISMF 11.5 – SMS Report Generation

```

.
.      DASD VOLUME REPORT FROM SAVED ISMF LIST   Invalid DSN - qualifier
.
.  To generate report, specify the following information and press Enter:
.  Saved ISMF List . . . . . NBVOL      (DASD Volume List)
.  Data Set to Hold Report
.  ==> 'NB.SMS.VOLREPT'
.  _____
.  Replace Contents if DSN Exists . . Y (Y or N)  Page Length   60
.                                          Totals . . . . Y (Y or N)
.
.  Specify fields in numeric order (max width of report is 133 characters):
.
.      Length                                     Length
.
.  Volume Serial . . . . 1   (7)   Free VIRs . . . . . —   (9)
.  Free Space . . . . . 3   (10)  Device Type . . . . . —   (8)
.  % Free . . . . . 4   (6)   Dev Number . . . . . 2   (7)
.  Alloc Space . . . . . —   (10)  Shr DASD . . . . . —   (8)
.  Frag Index . . . . . —   (8)   Use ATTR . . . . . —   (8)
.  Largest Extent . . . . —   (10)  RD Cache Status . . . —   (9)
.
.  Use DOWN Command to Scroll Forward; Use UP Command to Scroll Backward;
.  Use HELP Command for Help; Use END Command to Exit.

```



Volume Report - Results

BROWSE NEAL.SMS.DASDVOL.REPT

***** Top of Data *****

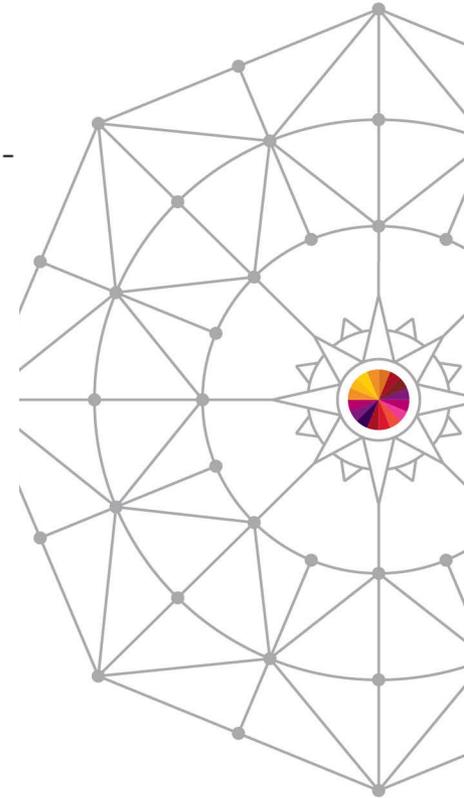
STATUS OF VOLUMES

VOLSER DEVNUM FREESPC %FREE

APPLPK	0D28	514957K	22
CATLV2	0F50	231138K	8
DFPLIB	083E	71881K	3
DFPTL1	083B	604988K	22
DFPTL2	083C	7194K	0
DFPTL3	083D	292284K	11
DTBASE	0815	8117616K	30
DUMPDS	0823	1330331K	5
DUMPD1	08C2	5108503K	19
HSMLIB	0828	1107K	3
LIBTST	0280	1735934K	75
MVSDLB	0802	1046624K	13
MVSRES	0801	2504173K	30
MVSSMP	0806	92964K	3
MVSZFS	080F	906015K	22
NBPACK	0F61	41336K	100

*** VOLUME SPACE INFO ***

*** TOTAL ALLOC SPACE...KB=160864072 MB=157093 GB=153
*** TOTAL FREE SPACE ...KB=35381789 MB=34552 GB=33



Volume Report – via Batch

- ISMF 11.7.1. “Generate DASD Volume Report”

- JCL:

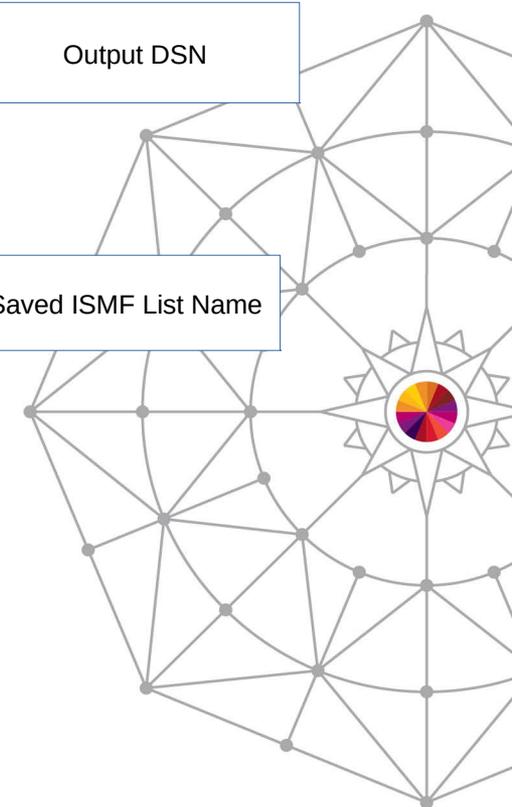
```
//GENREP EXEC ACBJBAOB,
//      PLIB1=SYS1.DGTPLIB,
//      TABL2=SYS1.SMP.OTABLES
//ISPFIL DD DSN=NEAL.SMS.DASDVOL.REPT,DISP=OLD
//SYSTSIN DD *
PROFILE PREFIX(USER2)
ISPSTART CMD(ACBQVAR1 NBVOL SORT(VOLSER)) +
NEWAPPL(DGT) BATSCRW(132) BATSCRD(27) BREDIMAX(3)
BDISPMAX(99999999)
/*
//SYSIN DD *
VOLSER
DEVNUM
FREESPC
%FREE
TITLE=STATUS OF VOLUMES
TOTALS
/*
```

Output DSN

Saved ISMF List Name

Columns, In order

See comments in JCL for
available columns



Volume Report - Results

BROWSE NEAL.SMS.DASDVOL.REPT

***** Top of Data *****

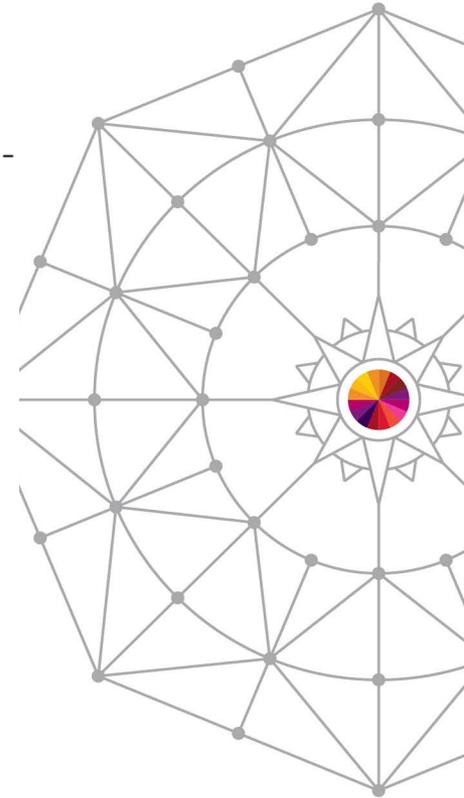
STATUS OF VOLUMES

VOLSER DEVNUM FREESPC %FREE

APPLPK	0D28	514957K	22
CATLV2	0F50	231138K	8
DFPLIB	083E	71881K	3
DFPTL1	083B	604988K	22
DFPTL2	083C	7194K	0
DFPTL3	083D	292284K	11
DTBASE	0815	8117616K	30
DUMPDS	0823	1330331K	5
DUMPD1	08C2	5108503K	19
HSMLIB	0828	1107K	3
LIBTST	0280	1735934K	75
MVSDLB	0802	1046624K	13
MVSRES	0801	2504173K	30
MVSSMP	0806	92964K	3
MVSZFS	080F	906015K	22
NBPACK	0F61	41336K	100

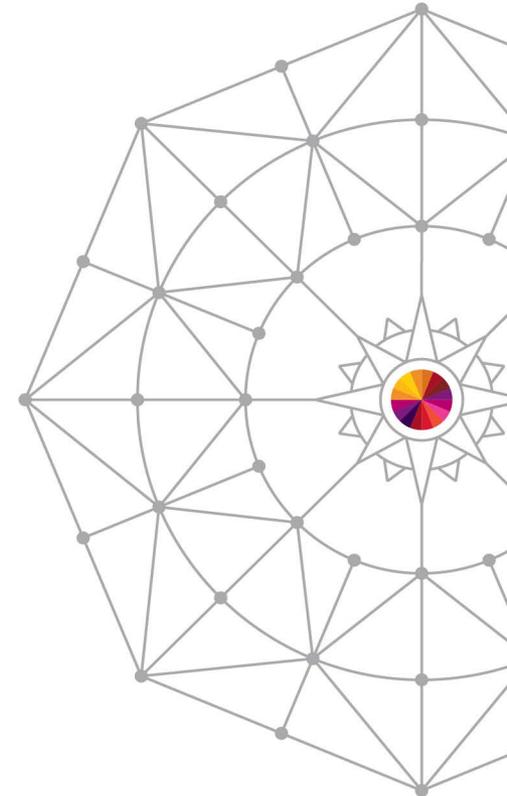
*** VOLUME SPACE INFO ***

*** TOTAL ALLOC SPACE...KB=160864072 MB=157093 GB=153
*** TOTAL FREE SPACE ...KB=35381789 MB=34552 GB=33



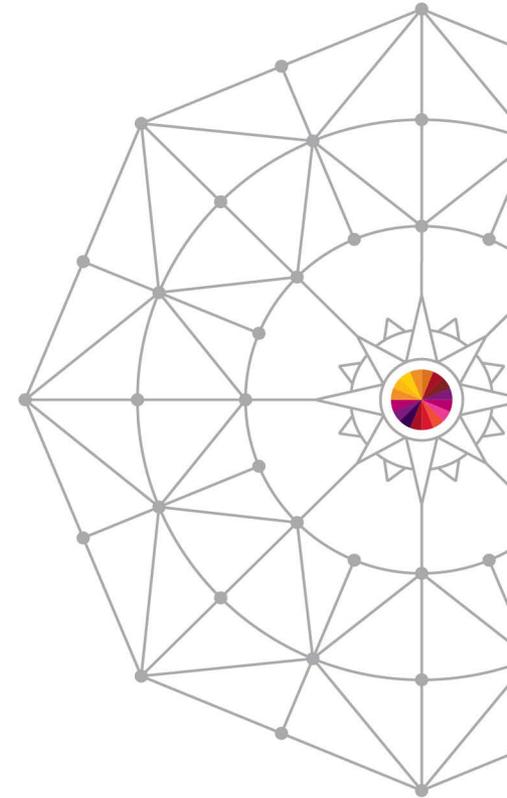
Reporting Summary

- Use saved lists to generate reports
 - Data set reports
 - DASD Volume reports
 - TAPE Volume reports
 - DFSMS Configuration Reports
- Example tasks:
 - Track FREESPACE on a daily basis
 - Watch storage groups for high fragmentation



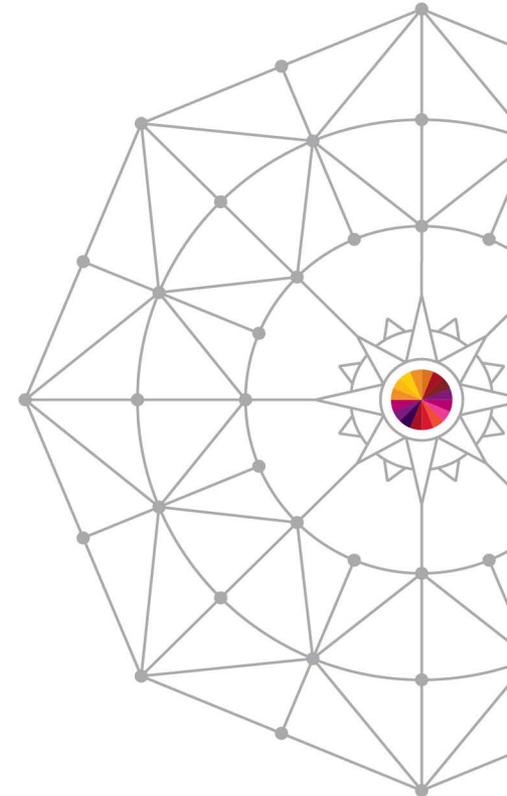
Demonstrations and Details:

- Using COPYFILT
- Using model command generation
- Building and use ACS test cases
- Generating a volume report in batch
- **Adding a set of volumes to a Storage Group**
- Generating a new data class



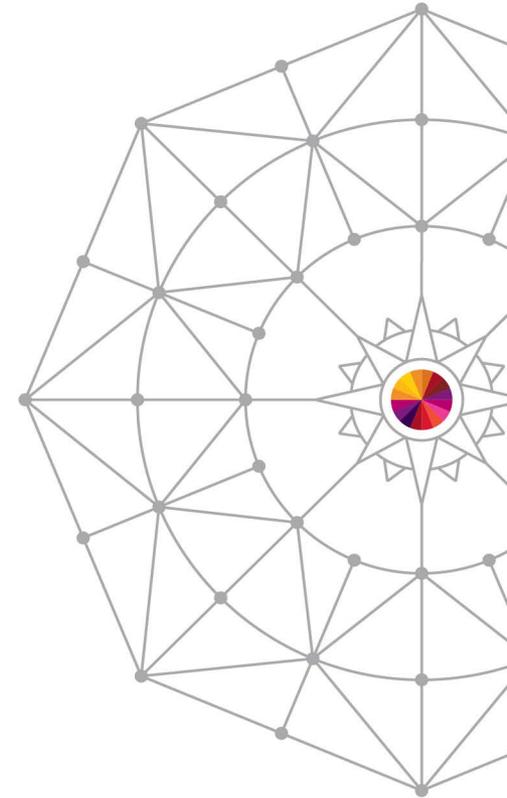
Adding a volume to a SG - Batch

- Sample in “Change Storage Group Volume Status” - ACBQBAI9
- 3 DD : VOLADD, VOLDEL, VOLALT:
- ```
//TEMPFILE DD DSN=&&VOLADDS,DISP=(NEW,KEEP),
// SPACE=(TRK,(1,1)),LRECL=300,RECFM=F,BLKSIZE=300
//SYSTSIN DD *
PROFILE PREFIX(IBMUSER)
ISPSTART CMD(ACBQBAI9) +
BATSCRW(132) BATSCRD(27) BREDIMAX(3) BDISPMAX(99999999)
/*
//VOLADD DD *
UPDHLVLSCDS()
SCDS(MY.SMS.CDS) VOL(SMS900) SG(PRIMARY) STATUS(ENABLE)
SCDS(MY.SMS.CDS) VOL(SMS901) SG(PRIMARY) STATUS(DISALL,+
ENABLE,,DISNEW,,NOTCON,DISALL,ENABLE,QUIALL)
SCDS(MY.SMS.CDS) VOL(SMS902) SG(PRIMARY) STATUS(ENABLE)
```



## Demonstrations and Details:

- Using COPYFILT
- Using model command generation
- Building and use ACS test cases
- Generating a volume report in batch
- Adding a set of volumes to a Storage Group
- **Generate a new data class**



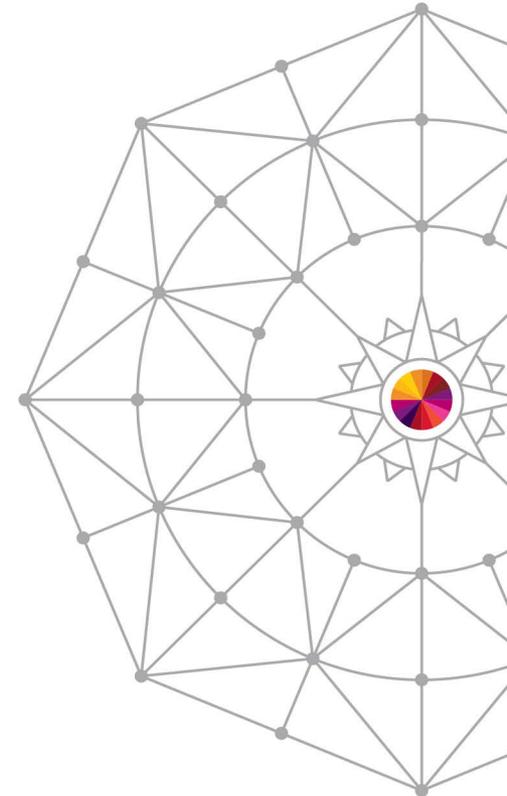
# Generate Data Class

## • ISMF 11.7.3 “Define/Alter/Display Data Class”

```

//*****
//*
//* SAMPLE JCL TO DEFINE/ALTER/DISPLAY DATA CLASSES IN BATCH
//*
//* INSTRUCTIONS BEFORE SUBMITTING:
//*
//* CHANGE JOBCARD
//* CHANGE PREFIX
//* CHANGE PARAMETERS
//*
//* PARAMETER FOLLOWING ACQBAD1 - DEFINE OR ALTER OR DISPLAY
//***** ADD BEG *****
//*
//* Required Fields:
//*
//* SCDS : Specify the name of the CDS that contains the
//* dataclass you want to Define/Alter/Display.
//*
//* Possible values : Valid CDS name .
//*
//* DCNAME : Name of the Dataclass.
//*
//* Possible values : 1 - 8 characters
//*
//* Optional Fields:
//*
//* DESCR : Remarks about the DC being defined/alterd.
//* 1-120 characters.
//*
//* RECORG : Specify how the records in the Datasets will be @AIC*
//* organized during allocation.
//*
//* Possible values :

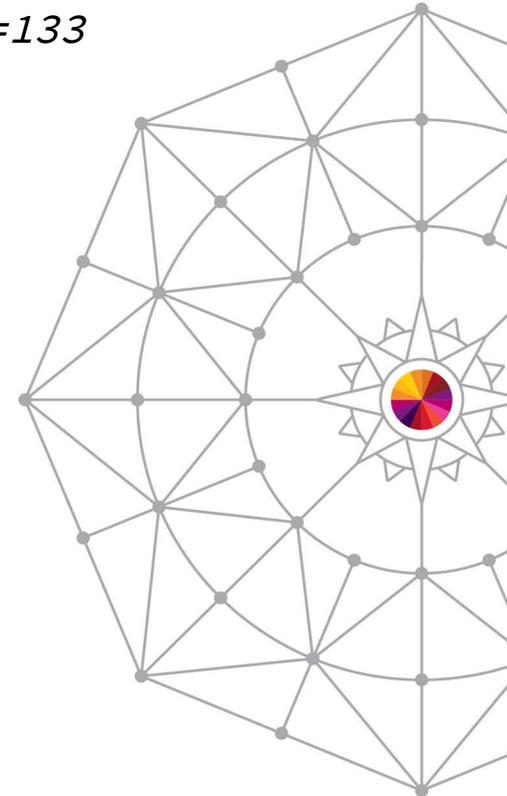
```



# Generate a Data Class - JCL

*DC for Extended format PS data sets, RECFM=FB LRECL=133*

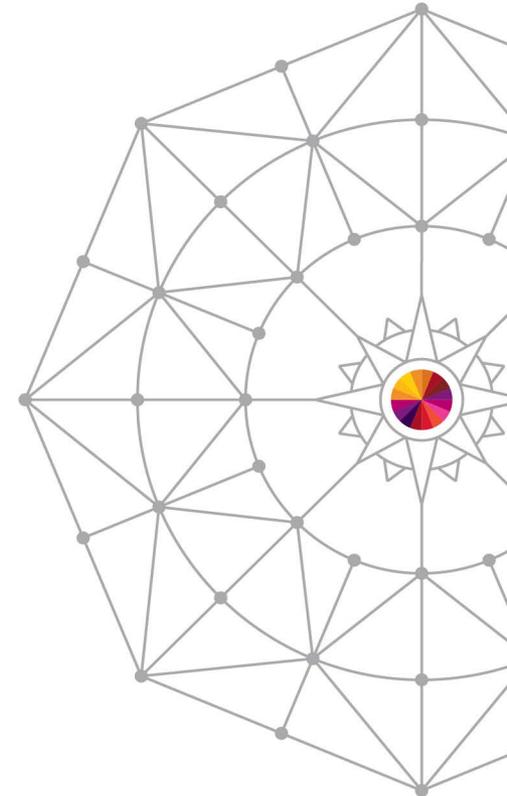
```
//STEP1 EXEC ACBJBAOB,
// TABL2=MYUSER.TEST.ISPTABL
//SYSUDUMP DD SYSOUT=*
//SYSTSIN DD *
PROFILE PREFIX(MYUSER)
ISPSTART CMD(ACBQBAD1 +
DEFINE +
SCDS(TEST.CDS) DCNAME(NEWDC1) +
DESCR(TESTING DATACLASS FOR BATCH GEN) +
RECFM(FB) LRECL(133) SPCAVREC(K) +
SPCPRM(10000) SPCSEC(500) VOLCNT(3) +
DSNMTYP(EXT) IFEXT(R) UPDHLVLSCDS(Y)) +
BATSCRW(132) BATSCRD(27) BREDIMAX(3) BDISPMAX(999999)
```



# Practical Example:

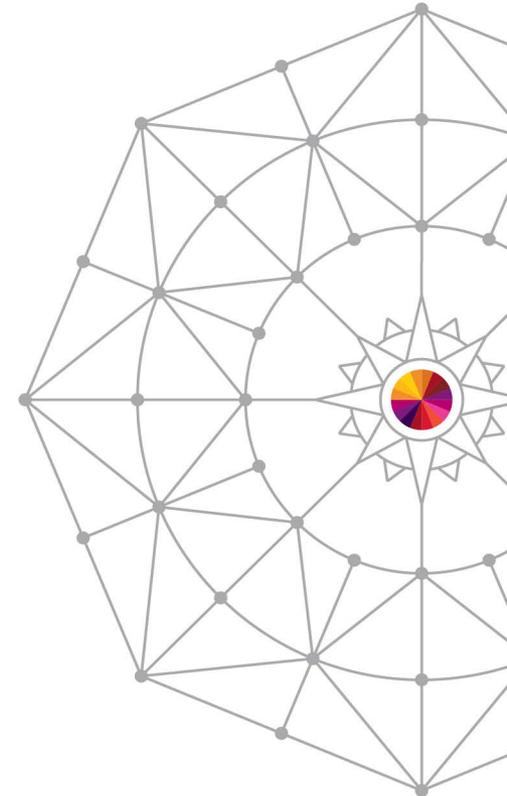
- Enable or Disable CA RECLAIM in a DC:

```
//STEP1 EXEC ACBJBAOB,
// TABL2=SYS1.SMP.OTABLES
//SYSUDUMP DD SYSOUT=*
//SYSTSIN DD *
PROFILE PREFIX(MYUSER)
ISPSTART CMD(ACBQBAD1 +
ALTER +
SCDS('MYSYS.SMS.SCDS') +
DCNAME(DCNEW2) +
RECLAIMCA(Y) +
UPDHLVLSCDS(Y) +
) +
BATSCRW(132) BATSCRD(27) BREDIMAX(3) BDISPMAX(999999)
```



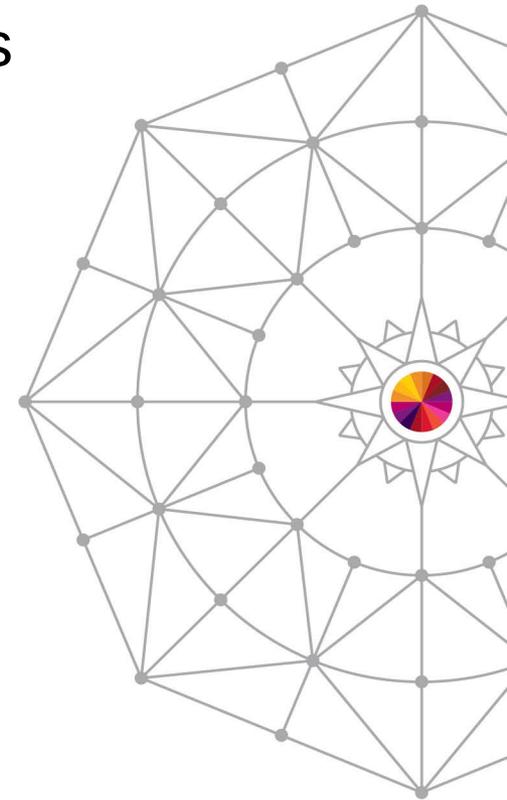
## Want More?

- Create an entire SMS config via batch
- Code a single batch job for ACS translate / validate / test
- Code REXX to generate JCL for you to:
  - Add a volume based on input
  - Define new data classes
  - Run custom volume reports
- Run daily reports to watch certain data sets
- **Come play in session 15097 – ACS Lab**



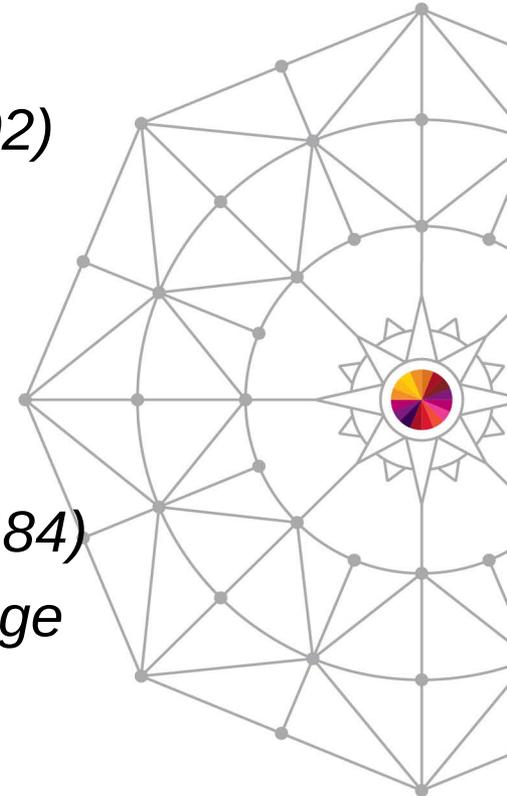
# Summary

- NaviQuest is a suite of tools to do SMS tasks
- Accessible via ISMF Option 11
- Batch JCL available through ISMF or SYS1.SACBCNTL
- Simplifies basic tasks



## For More Information:

- Manuals:
  - *DFSMSdfp Storage Administration (SC26-7402)*
    - Chapter 22 – Using NaviQuest
  - *DFSMS Using the Interactive Storage Management Facility (SC26-7411)*
- Redbooks
  - *Maintaining Your SMS Environment (SG24-5484)*
  - *NaviQuest Demonstration and Hands-On Usage Guide (SG24-4720)*



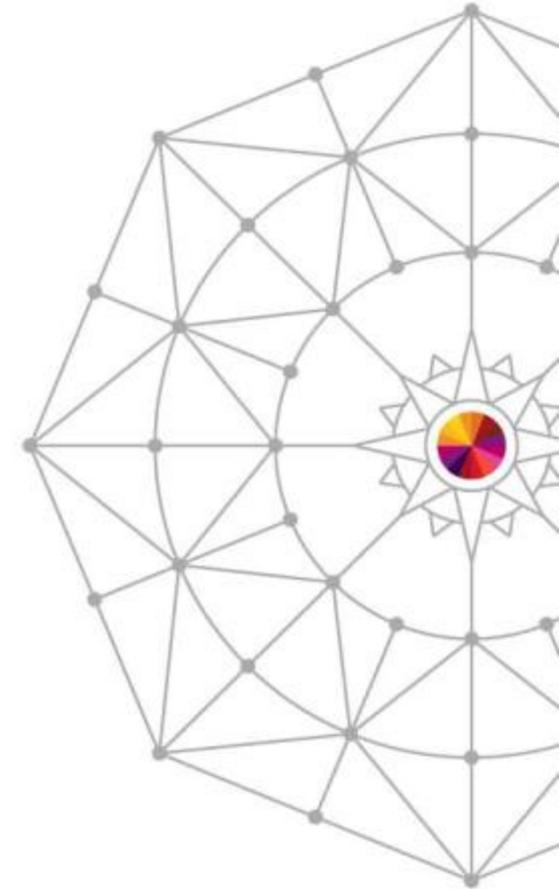
# NaviQuest – Streamlining SMS

Neal Bohling

DFSMS Defect Support, IBM

March 10, 2014

Session# 15093



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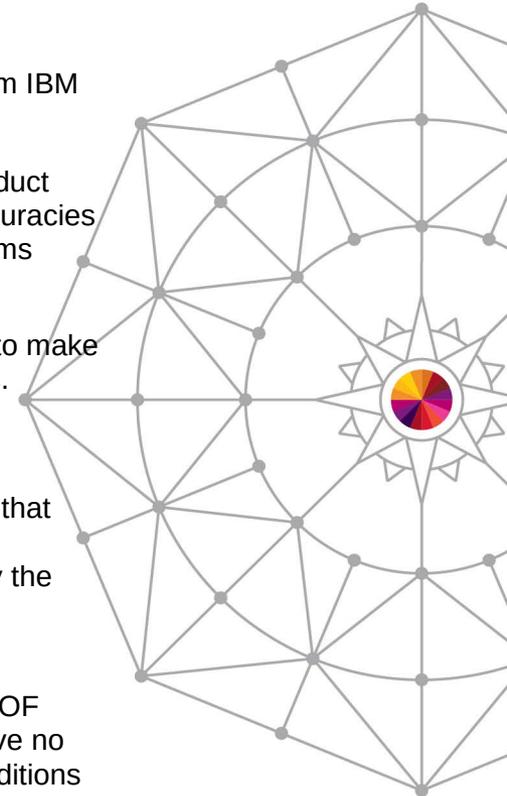
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