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# Introducing the IMS Catalog: Open Access to IMS DB Metadata

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IBM IMS Advanced Technical Skills

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# Agenda

- IMS Catalog Overview
- IMS Catalog Enablement
- IMS Catalog Lifecycle
- IMS Catalog and ACBLIB Migrations
- Supplement - IMS Catalog Sharing

# IMS Catalog Overview

# Why an IMS Catalog now ?



- No one trusted source for IMS database, program, and application metadata information
- Large scale deployment of IMS Open Database can be a challenge
  - JDBC metadata discovery APIs are insufficient
    - can't visualize and report on databases
    - difficult to generate SQL queries and query database contents
- Customers limited to database metadata generated by DLIModel Utility
  - Java metadata classes are ...
    - offline and not guaranteed to be current
    - deployed everywhere
    - hard to maintain and keep in sync with realtime IMS resources
    - not trusted and inflexible
    - not easy to manage or scale for large Open Database solutions
    - lacking application information

# How can an IMS Catalog help ?



- Provides a trusted, online source for database, program and relevant application metadata that IMS controls
  - IMS catalog metadata stored in an IMS HALDB database
- Enables scalable and flexible IMS Open Database solutions
  - Removes the need for local metadata on each client platform
    - Metadata is maintained in the IMS catalog for use by Java applications
  - Opens up metadata discovery and exchange for IMS Open Database and the IMS Enterprise Suite Explorer for Development
- Enables IMS integration with IBM tools
  - QMF
  - COGNOS
  - Optim Development Studio
  - Rational Asset Analyzer
  - InfoSphere Data Architect

# What is Metadata?



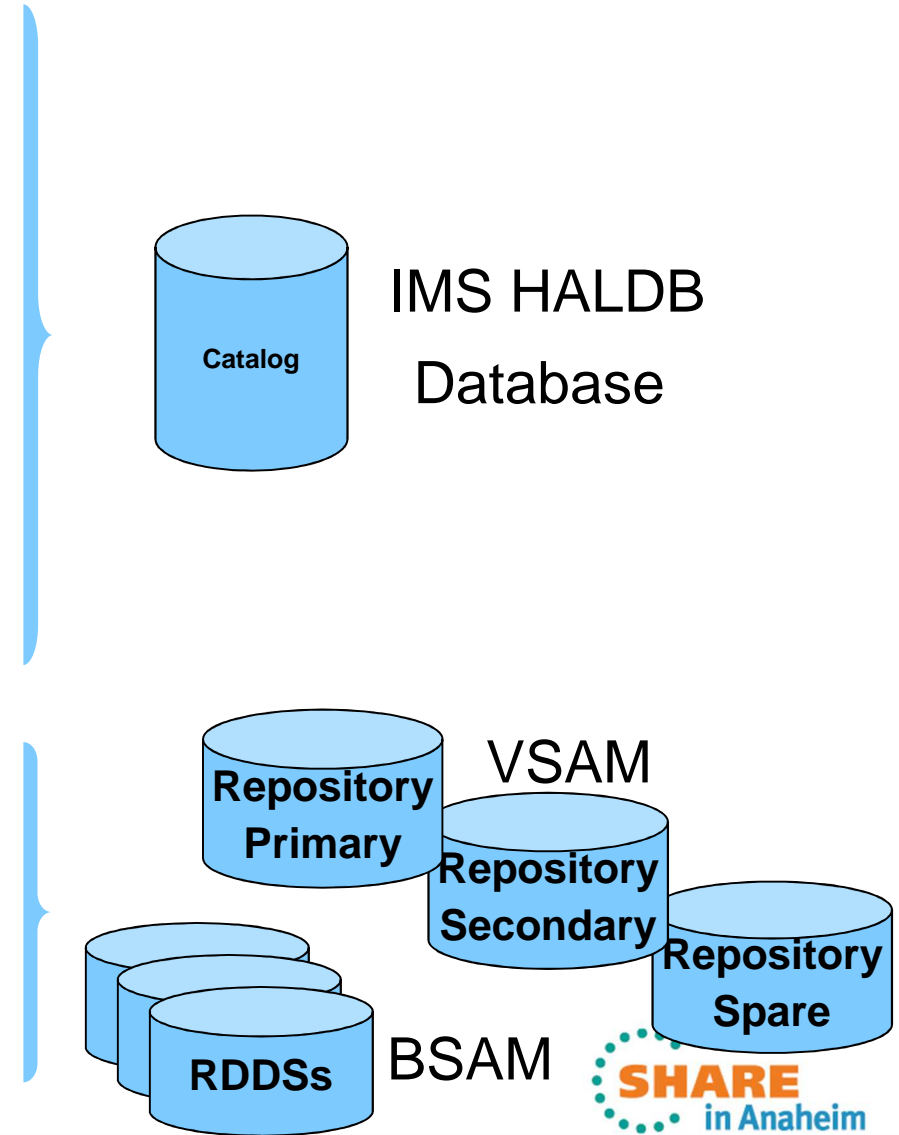
“*Data about Data*” that *describes* your company’s *information* from *multiple perspectives*.

- B** • **Business Metadata**
  - Business rules, definitions, terminology, glossaries, algorithms and lineage using business language
  - Audience: Business users
- T** • **Technical Metadata**
  - **Defines info for databases, applications, and programs**
    - **segments & fields / tables & columns**
    - **DBD and application defined fields**
    - **data types, attributes, redefines, mappings, arrays**
  - **Audience: APPL, BI & ETL developers, data profilers / modelers**
- **Operational Metadata**
  - Information about application runtime
    - Frequency, record counts, component by component analysis and other statistics
  - Audience: Operations, management and business users

# Types of IMS Technical Metadata and Storage Method

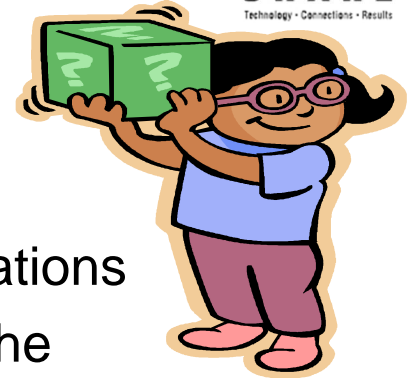


- DB
  - PSB/DBD resources
    - Database structure definitions
    - Physical database definitions
    - Segment definitions
    - Field definitions
  - Application
    - Data types
    - Application defined fields
    - Encodings
    - Redefines
    - User defined types
    - Structures
  
- TM
  - MODBLKS resources
    - Program definitions
    - Transaction definitions
  - MFS FORMAT resources
  - Application
    - Input/output message definitions

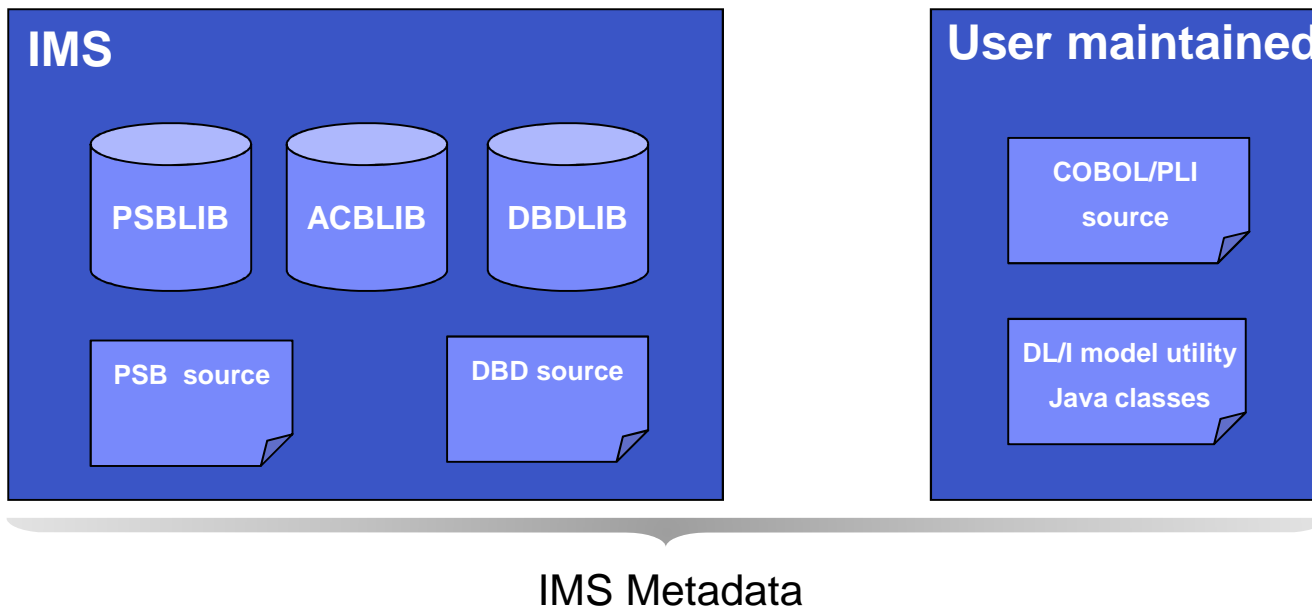




# Before the IMS Catalog



- Databases partially defined in the IMS DBD
  - Only key/searchable fields needed by applications
  - Remaining segment data is not defined
- Remaining database segment definition is within Applications
  - COBOL COPYBOOKs and PL/I INCLUDEs map all the segment data
  - Applications can have different mappings for one segment



# With the IMS Catalog

- Database and program resources defined to an IMS system and relevant application information can be stored as metadata in an IMS catalog
  - Databases, fields, segments, data types, attributes, mappings and more ...
- The IMS catalog is updated when you create, alter or delete IMS resource or application information
- Updates to the IMS catalog are done only via integrated IMS processes
  - Catalog Populate Utility (initial catalog load and member update)
  - PSBGEN, DBDGEN and ACBGEN
- IMS Catalog metadata can:
  - Enhance understanding of the data
  - Improve consistency of the data
  - Improve impact analysis of data
  - Improve development productivity
  - Improve data governance
- IMS Catalog is a key component of the overall IMS strategy:
  - Simplification
  - Integration

# The IMS Catalog Database



- Contains metadata related to an IMS system's databases & programs
  - DBDs and PSBs and Application info
- IMS PHIDAM/OSAM HALDB database
  - Defined with 4 DSGs (Data Set Groups)
- Has one Secondary Index
- Unique feature
  - DBRC use is optional for the IMS Catalog HALDB database
    - **ONLY** HALDB that isn't required to be defined to DBRC
  - IMS can manage allocation/creation of catalog database data sets
    - Uses parameters in the "CATALOG" section of DFSDFxxx PROCLIB member

# The IMS Catalog Database



- IMS provides DBD and PSB source code for the Catalog database
- IMS provides object code for the Catalog DBDs and PSBs
- PHIDAM DBD reserved name is DFSCD000
- PSINDEX DBD reserved name is DFSCX000
- Used to connect DBDs to PSBs that reference them
- PSBs provided to load, read and update the Catalog database
  - DFSCPL00 is used for initial load process
    - Used by the Catalog Populate Utility
  - DFSCP000 (COBOL/HLASM), DFSCP002 (PL/I), and DFSCP003 (PASCAL) are used for read access
  - DFSCP001 is used for update access
    - Used by ACBGEN and Catalog Populate Utility
- Default catalog PCB is DFSCAT00
- ACBGEN required for all catalog PSBs

# The IMS Catalog Database



- Catalog database management is required
  - Review/adjust database buffer pool definitions
  - Perform routine management and maintenance on the Catalog database
    - Image Copy, Pointer Checker, Reorg, etc...
  - Catalog database will need to be REORG'd
    - If Catalog database is defined to the RECONs →
      - *HALDB OLR non-disruptive reorganization is supported*
    - If Catalog database is not defined to the RECONs →
      - *HALDB OLR can't be supported and a reorg utility must be employed*
- Support with existing backup and recovery procedures
  - Image copy, recovery, backout utilities etc...
  - If Catalog database is not defined to the RECONs →
    - Recovery help is limited
    - Same as non-registered, full function database recovery procedure

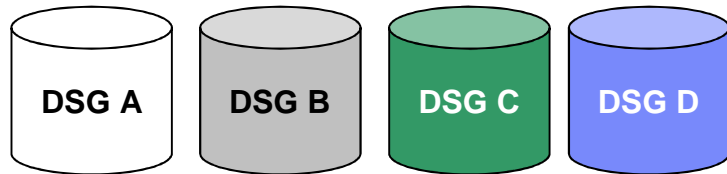
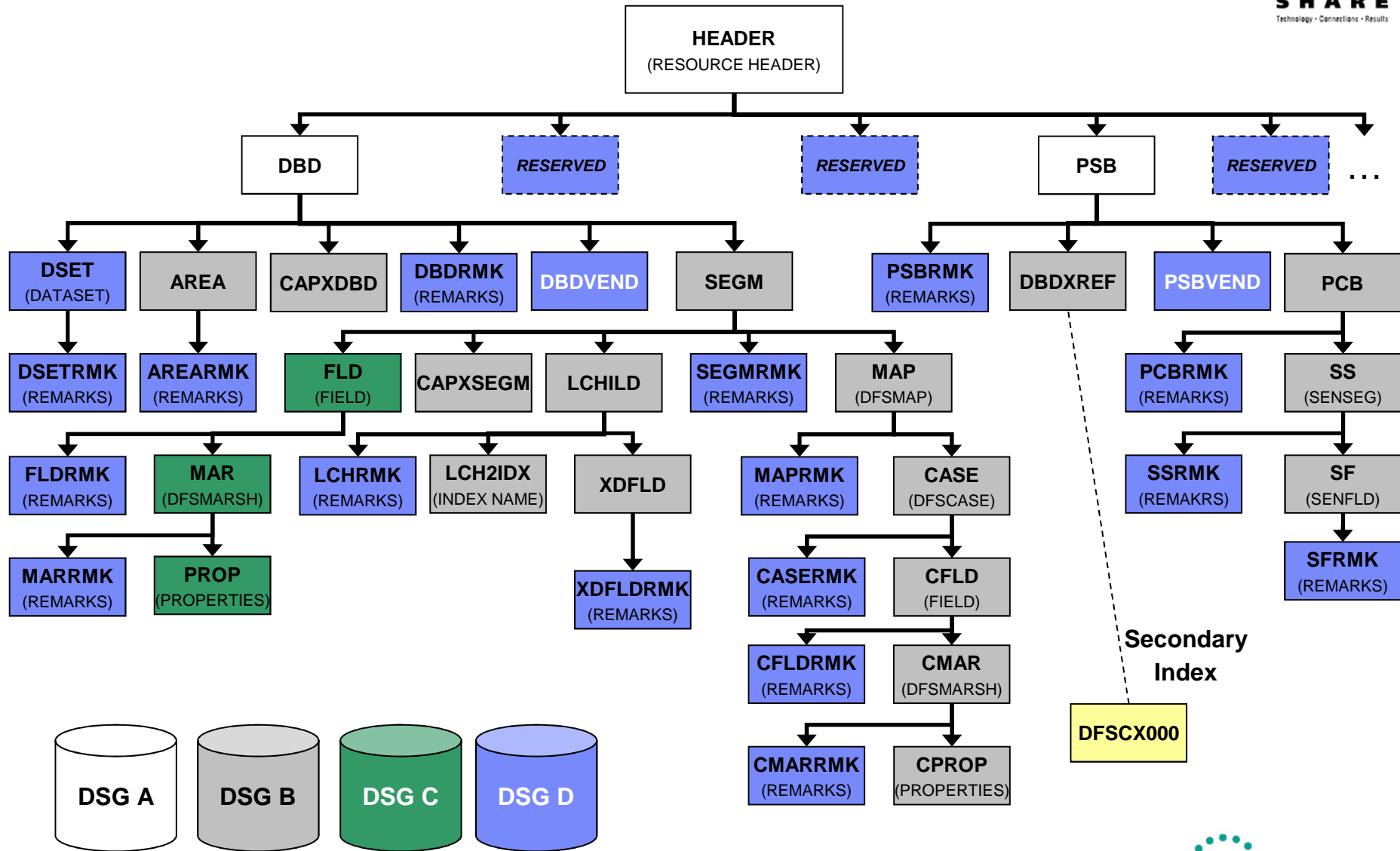
# The IMS Catalog Database



- Root segment of the Catalog database is a generic resource header
  - Indicates the type of resource → DBD or PSB
    - A dependent of the Root and it's Children are a complete DBD or PSB
      - *Multiple versions of a specific resource are supported*
        - *Most resources are differentiated by their ACBGEN timestamp*
        - *Logical DBDs and GSAM DBs are differentiated by their DBDGEN timestamp*
- Catalog database segments typically correspond to macro statements in the DBD and PSB source
- One segment at the first Child level under both the DBD and PSB segments is available for vendor/customer use
  - DBDVEND
  - PSBVEND

Let's look at the IMS Catalog database physical structure...

# Physical Catalog Structure



# IMS Catalog Database Restriction

## WARNING:

**Coexistence with previous IMS releases is not supported !**

**Access to the IMS Catalog Database from any IMS subsystem, program, utility or client executing or utilizing an IMS release earlier than IMS 12 is not supported !**

- For Example:
  - *Access to the Catalog database from an IMS 10 or IMS 11 online subsystem is not supported*
  - *Access to the Catalog database from the IMS Explorer via an IMS 10 or IMS 11 subsystem is not supported*
  - *Access to the Catalog database from an IMS 10 or IMS 11 DFSDDLT0 utility job is not supported*



# IMS Catalog Enablement

# IMS Catalog Enablement



- Add catalog DBDs and PSBs to your DBDLIB, PSBLIB & ACBLIB
  - Copy DBD and PSB object code from SDFSRESL to your DBDLIB and PSBLIB

```
//CPYCMEM EXEC PGM=IEBCOPY
//SDFSRESL DD DSN=SDFSRESL,DISP=SHR
//DBDLIB DD DSN=MYIMS.DBDLIB,DISP=OLD
//PSBLIB DD DSN=MYIMS.PSBLIB,DISP=OLD
//SYSIN DD *
COPY OUTDD=DBDLIB,INDD=((SDFSRESL,R)),LIST=YES
SELECT MEMBER=(DFSCD000,DFSCX000)
COPY OUTDD=PSBLIB,INDD=((SDFSRESL,R)),LIST=YES
SELECT MEMBER=(DFSCPL00,DFSCP000,DFSCP001,DFSCP002,DFSCP003)
```

- ACBGEN the catalog DBD and PSB resources into your ACBLIB

```
//CATAB EXEC PGM=DFSRRRC00,PARM='UPB'
//STEPLIB DD DSN=SDFSRESL,DISP=SHR
//DFSRESLB DD DSN=SDFSRESL,DISP=SHR
//IMS DD DSN=MYIMS.DBDLIB,DISP=SHR
// DD DSN=MYIMS.DBDLIB,DISP=SHR
//IMSACB DD DSN=IMS.ACBLIB,DISP=OLD
//SYSIN DD *
BUILD PSB=(DFSCPL00)
BUILD PSB=(DFSCP001)
BUILD PSB=(DFSCP000)
```

**N.B. The MODBLKS resources for the Catalog databases and programs do not need to be defined !**

# IMS Catalog Enablement

- Modify DFSDFXxx PROCLIB Member
  - New CATALOG section(s) for catalog related parameters
    - Single section format <SECTION=CATALOG>
    - Multiple section format <SECTION=CATALOG*imsid*>
      - Multiple IMS systems sharing one DFSDFXxx PROCLIB member
      - *imsid* suffix must be a four character IMS ID
  - CATALOG section parameters
    - CATALOG=N | Y
      - Catalog is disabled or enabled
      - If enabled, IMS automatically creates catalog DDIR & PDIRs at IMS startup
    - ALIAS=DFSC | xxxx (no default value)
      - Specifies any 1-4 alphanumeric value used as a Catalog database name prefix
      - Enables use of non-shared, Catalog databases within an IMSplex
        - Use in a data sharing environment where each IMS has its own Catalog database and all are registered in a single set of RECONS
        - At runtime, the alias Catalog database names are dynamically replaced with internal database names **DFSCD000** and **DFSCX000**
      - For standalone IMS system – use “**DFSC**” which is the standard Catalog database name prefix → **DFSCD000** and **DFSCX000**

# IMS Catalog Enablement



- DFSDFxxx PROCLIB Member
  - CATALOG section parameters (continued)
    - Information used by Catalog Populate Utility to automatically allocate the Catalog database data sets
      - DATACLAS
        - Optional data class for SMS managed data sets
      - MGMTCLAS
        - Optional management class for SMS managed data sets
      - STORCLAS
        - Required storage class for SMS managed data sets
      - IXVOLSER
        - Volume serial number for primary and secondary catalog indices
        - Required for non-SMS managed data sets
      - SPACEALLOC
        - Free space % (0 to 9999) added to the IMS-computed size of the primary & secondary data set allocations
      - SMSVOLCT
        - Number of volumes (1-20) created by the Catalog Populate utility for SMS-managed

# IMS Catalog Enablement



- DFSDFxxx PROCLIB Member
  - CATALOG section parameters (continued)
    - RETENTION=(MAX=2 | nnn) or RETENTION=(PERIOD=0 | nnn)
      - Specifies retention schedule for metadata in the IMS catalog
      - By default IMS keeps only two copies of the DBD or PSB in catalog
        - MAX=2 | nnn
          - Maximum number of versions of a DBD or PSB to be stored before they are replaced first-in first-out
        - PERIOD=0 | nnn
          - Maximum number of days a version of a DBD or PSB is to be stored before it can be replaced
          - Metadata versions older than the specified retention period are not automatically deleted, but available for removal when new version of metadata is added
          - Default value of “0” disables this feature

# IMS Catalog Enablement



- DFSDFxxx PROCLIB Member
  - Enabling the IMS catalog for IMS batch processing
    - Specify DFSDFxxx member on job EXEC parm
      - Requires JCL change to implement
    - User Exit Routine
      - Optional Catalog Definition user exit routine, DFS3CDX0
      - Alternative to specifying DFSDFxxx member through job JCL
      - Available if users cannot or choose not to modify job JCL

# IMS Catalog Enablement



- Definition of the HALDB structure
  - Partitioning of the catalog is the users responsibility
    - Minimum of 1 partition is required
    - Last partition must be able to contain the highest-key PSB record
    - Catalog HALDB uses the high-key selection method
      - No use of Partition Selection Exit is allowed
- Catalog Database Definition
  - For systems that use DBRC
    - Catalog database can be defined to the RECONS with the DBRC utility and commands
  - For systems that do not use DBRC
    - Catalog database must be defined to the Catalog Partition Definition data set using the Catalog Partition Definition Data Set utility, DFS3UCD0
  - If an ALIAS is used in the CATALOG sections of the DFSDFxxx member, each alias Catalog database must be defined

# IMS Catalog Enablement



- Using DBRC DSPURX00 utility and commands to define the Catalog database to the RECONS

```
//DEFCAT EXEC PGM=DSPURX00
//STEPLIB DD DSN=IMS.SDFSRESL,DISP=SHR
//SYSPRINT DD SYSOUT=*
//IMS DD DSN=IMS.DBDLIB,DISP=SHR
//SYSIN DD *
INIT.DB DBD(DFSCD000) TYPHALDB SHARELVL(3)
INIT.PART DBD(DFSCD000) PART(DFSCD01) -
  DSNPREFIX(dsnprefix.DFSCD000) -
  BLOCKSIZE(4096) -
  KEYSTRNG(X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF')
INIT.DB DBD(DFSCX000) TYPHALDB SHARELVL(3)
INIT.PART DBD(DFSCX000) PART(DFSCX01) -
  DSNPREFIX(dsnprefix.DFSCX000) -
  KEYSTRNG(X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF') /*
```

- If using a catalog alias prefix, replace **DFSC** in the database and partition names for the catalog and the catalog secondary index with the four character ALIAS name prefix
- You might need to define multiple alias name databases to the RECONS



# IMS Catalog Enablement



- Using the Catalog Partition Definition Data Set utility, DFS3UCD0, to define the Catalog database (for systems that do not use DBRC)

```
//S1 EXEC PGM=DFS3UCD0,REGION=0M
//STEPLIB DD DSN=IMS.SDFSRESL,DISP=SHR
//DFSRESLB DD DSN=IMS.SDFSRESL,DISP=SHR
//DFSHDBSC DD DSN=...,DISP=
//SYSPRINT DD SYSOUT=*
//IMS DD DSN=IMS.DBDLIB,DISP=SHR
//SYSIN DD *
HALDB=(NAME=DFSCD000)
PART=(NAME=DFSCD000,PART=partitionname,
      DSNPREFIX=dsnprefix,
      KEYSTRNG=keystring)
HALDB=(NAME=DFSCX000)
PART=(NAME=DFSCX000,PART=partitionname,
      DSNPREFIX=dsnprefix,
      KEYSTHEX=FFFFFFFFFFFFFFFF) /*
```

Unregistered  
Catalog database

- Catalog Partition Definition data set is populated with the information specified in the HALDB and PART control cards
  - RECON-like information for catalog database partition definition and structure
- The name DFSCD000 in the HALDB and PART statements contains the default catalog prefix **DFSC**. If your catalog uses an alias name prefix, substitute it in the JCL

# IMS Catalog Enablement



- After Catalog database is defined in Catalog Partition Definition Data Set
  - Identify unregistered Catalog database names
    - UNREGCATLG parameter in the DATABASE section of the DFSDFXxx member

```
/* **** */
/* Database Section */
/* **** */
<SECTION=DATABASE>
UNREGCATLG=(DFSCD000,DFSCX000) /* Unregistered IMS catalog DB */
/* **** */
/* **** */
/* **** */
```

- If using an alias name prefix, replace **DFSC** in the UNREGCATLG database names with the four character alias name prefix
- Limitations of using an unregistered Catalog database
  - NO IMS Data Sharing support
  - NO OLR support
  - NO partition definition change support
    - User must rebuild catalog partitions
  - Manual recovery required for unregistered Catalog databases

# IMS Catalog Enablement

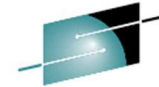


- After Catalog database is defined in Catalog Partition Definition Data Set
  - Create a new DFSMDA dynamic allocation member for the Catalog Partition Definition data set

```
//DYNALOC JOB
// *
//STEP EXEC IMSDALOC
//SYSIN DD *
    DFSMDA TYPE=INITIAL
    DFSMDA TYPE=CATDBDEF , DSNAME=dsn
    DFSMDA TYPE=FINAL
    END
/*
```

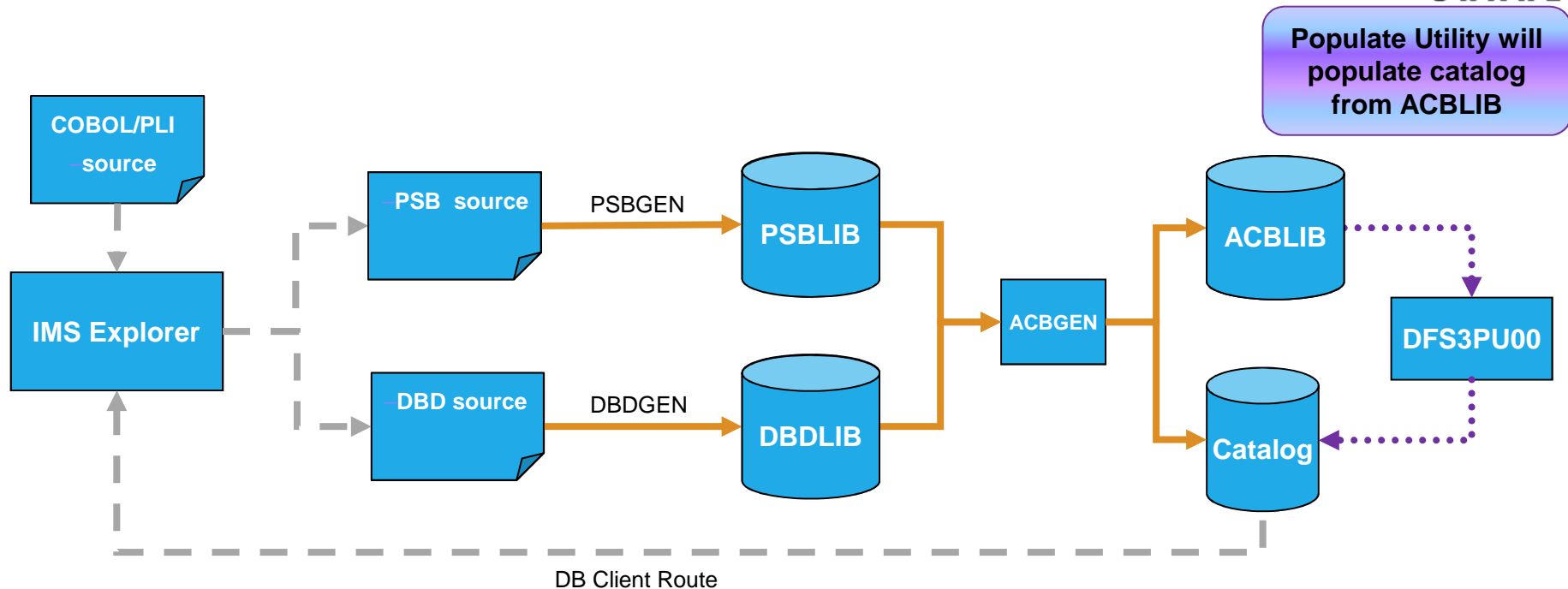
- *dsn* is the name of the Catalog Partition Definition data set
  - Catalog Partition Definition data set was allocated in the DFS3UCD0 utility on the DFSHDBSC DD
- Dynamically allocate Catalog Partition Definition data set in any IMS job step

# IMS Catalog Lifecycle



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# IMS Catalog Lifecycle



- ACBGEN will populate ACBLIB and catalog in same UOW
  - Populates ACBLIB with standard ACB info and extended info
  - Populates the catalog with extended info
- Key points
  - Only way to update catalog is via the Populate Utility or ACBGEN process
  - Extended info is acquired via the IMS Explorer
  - Extended info stored in ACBLIB members for recoverability

# IMS Catalog Creation



- Populate the IMS Catalog
  - Load the IMS Catalog using IMS Catalog Populate utility, DFS3PU00
    - Each ACB member is decoded, converted to catalog format, loaded into the catalog
  - Reads ACBLIB, DBDLIB and PSBLIB datasets as input
    - Data sets can be concatenated but only first occurrence of an ACB member is used
    - DBDLIB needed for Logical databases and GSAM databases
    - PSBLIB needed to determine which GSAM databases go into the catalog
  - Catalog database DBD and PSB segments will have a version and contain a timestamp that matches the ACB member timestamp
    - Used to associate an ACB member with a catalog member
    - Timestamp exceptions
      - DBDGEN timestamp for Logical and GSAM DBs
      - PSBGEN timestamp for GSAM only PSBs

# IMS Catalog Creation

- IMS Catalog Populate utility (DFS3PU00)
  - Can run as a typical IMS Batch or BMP job
    - Requires IMS logs for backout / recovery
    - Requires IRLM if catalog is shared and catalog active in an IMS subsystem
      - Business as usual for data sharing
    - BMP mode allows for updates to catalog in non-data sharing environment
    - Requires DBRC if catalog is defined in the RECON
    - If using Catalog Partition Definition Data Set
      - Users responsible to ensure online catalog access has ceased
      - Business as usual for non-registered full function DB
  - Can also be used to insert additional records to an existing Catalog database

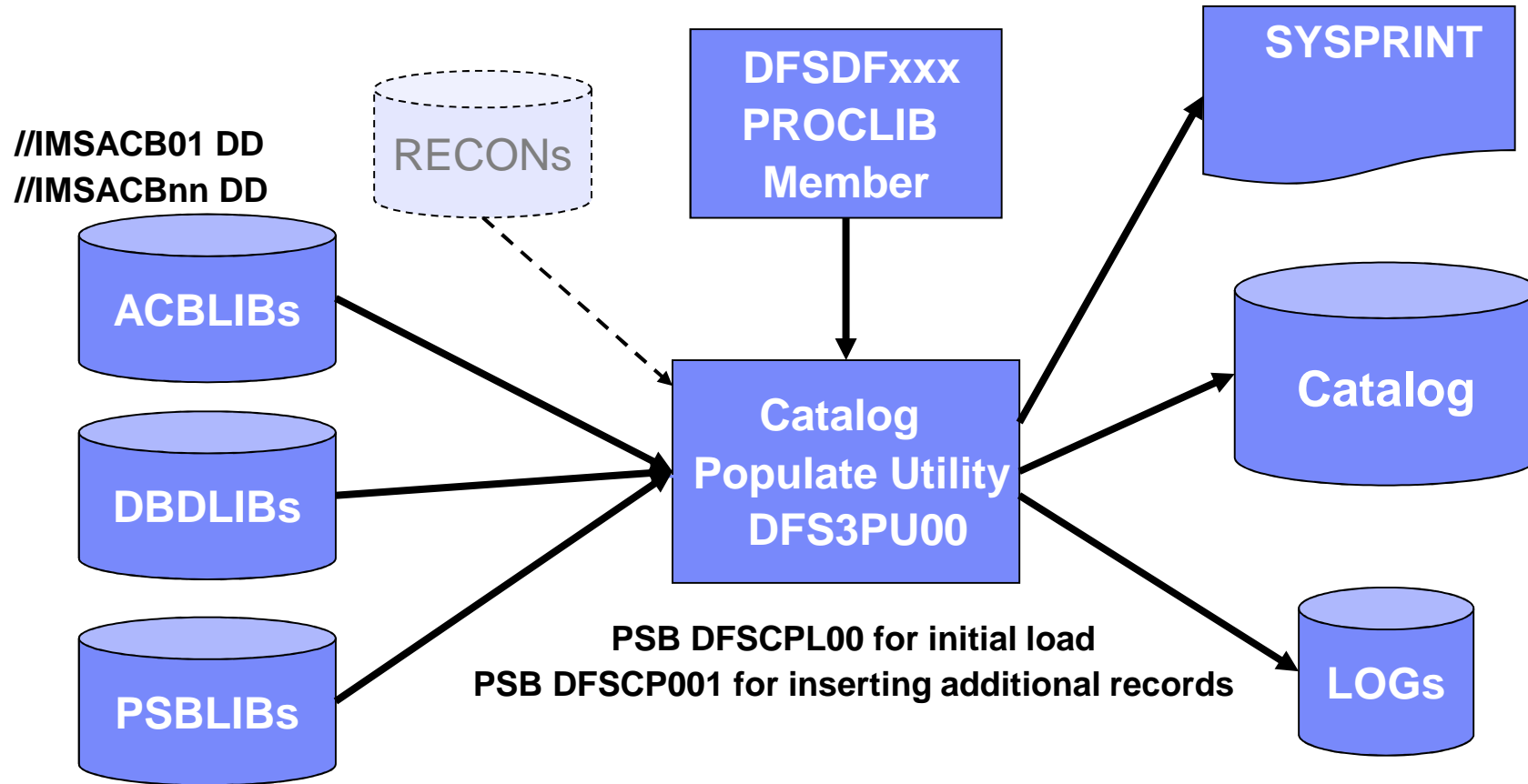
# IMS Catalog Creation



- Load the IMS Catalog using the new ACB Generation and Catalog Populate utility, DFS3UACB
  - Generates the ACB library members and loads the IMS catalog metadata in the same job step
  - Not recommended if ACBLIB is already valid
    - No need to recreate the ACBLIB, just populate the catalog

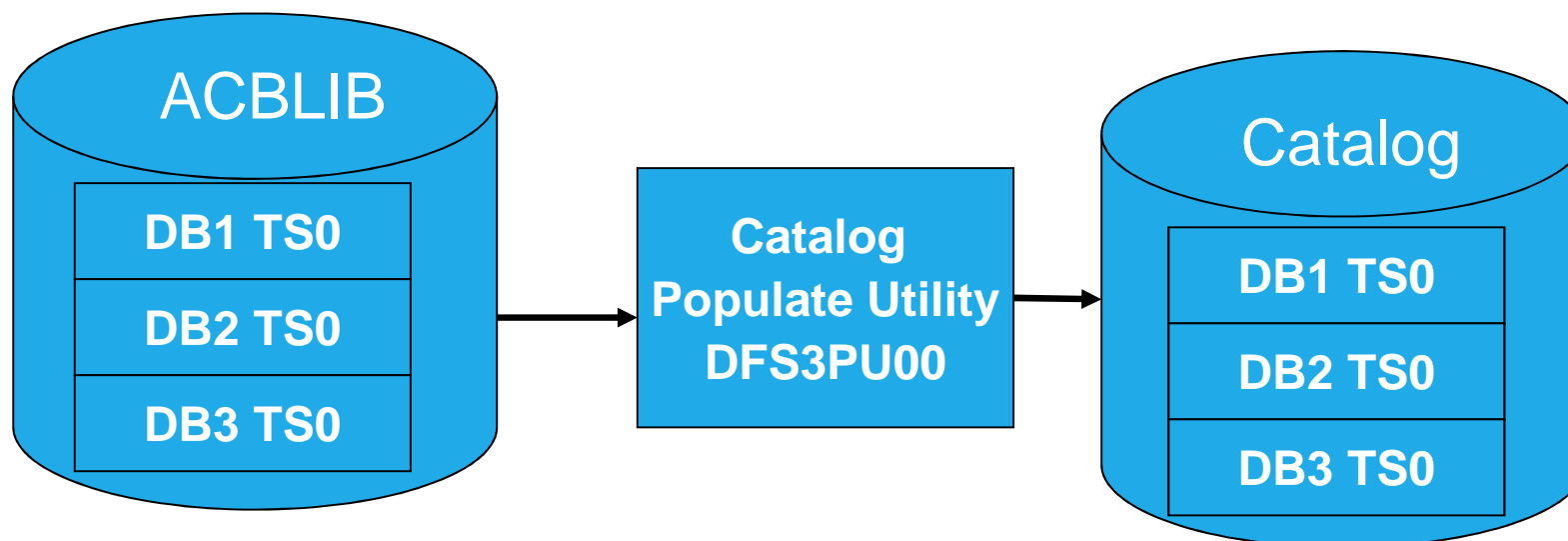


# Catalog Populate Utility – DFS3PU00



**Take an Image Copy of the Catalog database after the initial populate !**

# IMS Catalog Members After Populate Utility



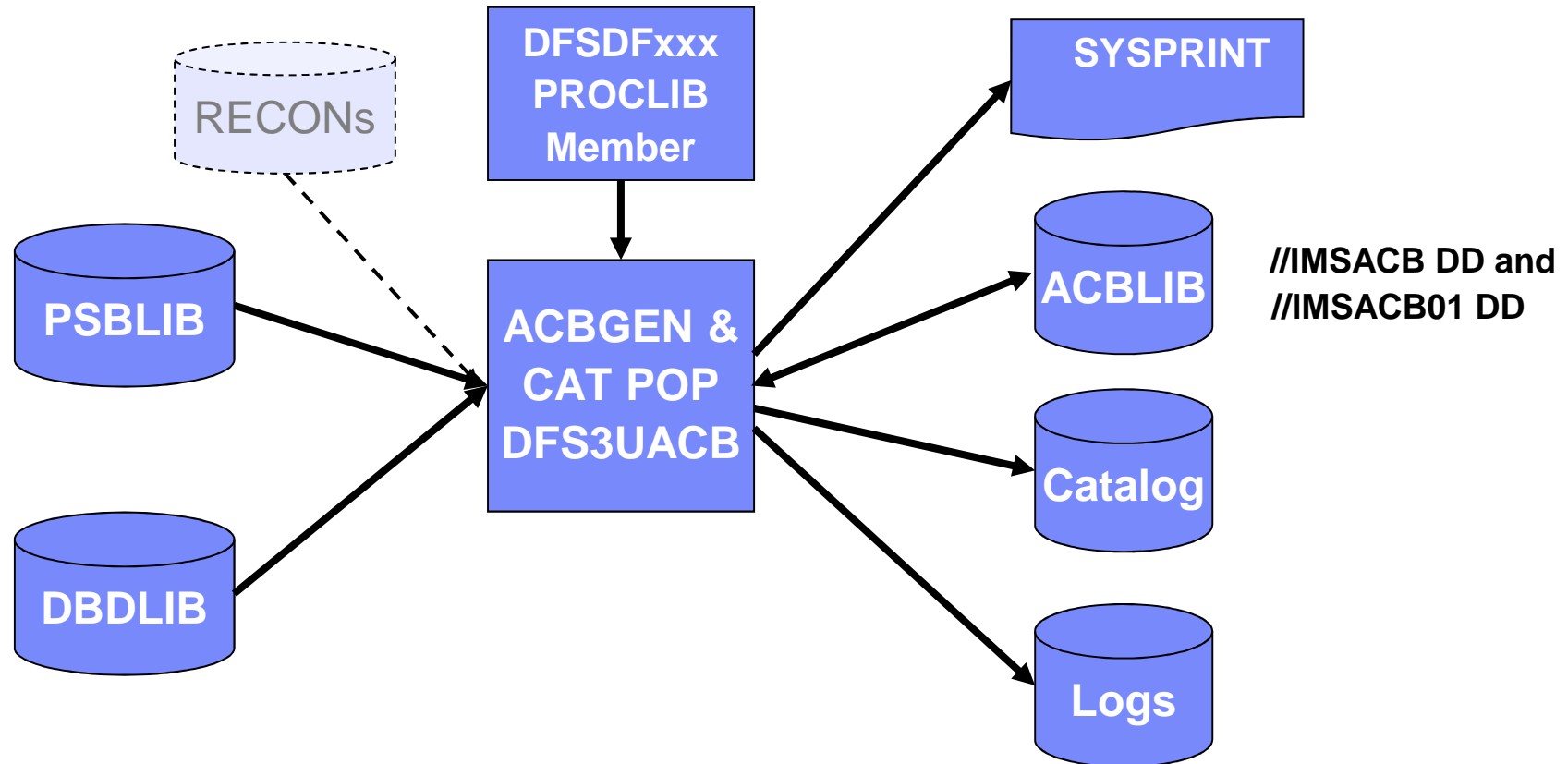
- There are 3 members in an ACBLIB
- Run the Catalog Populate Utility, DFS3PU00
- The catalog members will have a timestamp TS0
- This is the ACB member timestamp

# Adding IMS Catalog Metadata



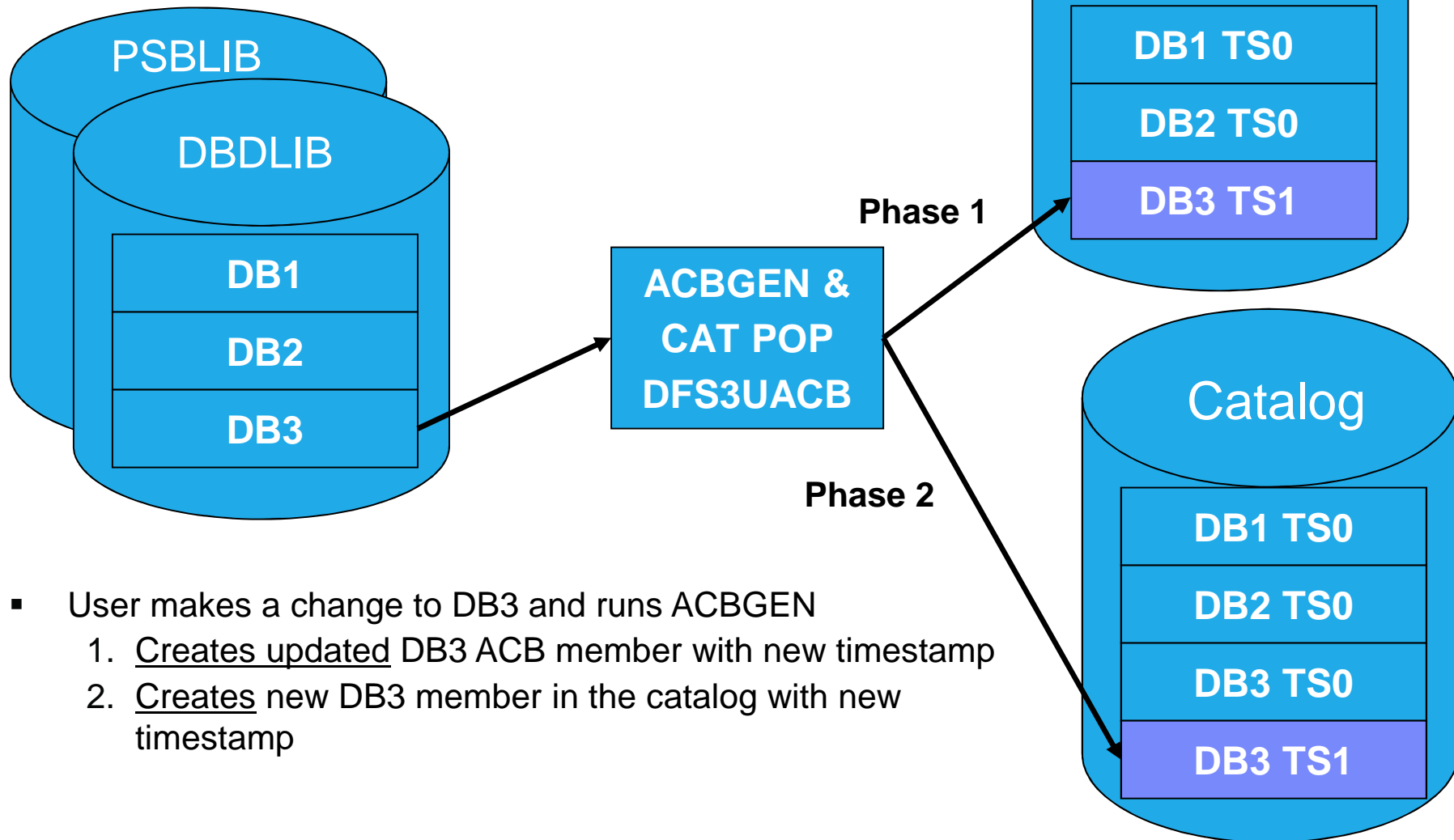
- New ACB Generation and Catalog Populate utility, DFS3UACB
  - Replaces existing ACBGEN Utility, DFSUACB0, if IMS catalog enabled
  - Generate ACBLIB member and create catalog metadata in a **single job step**
    - Phase 1 - ACBGEN
      - DBDLIB and PSBLIB members used as input
      - Validation is unchanged
      - ACB member is written to ACBLIB with new ACBGEN timestamp
    - Phase 2 – IMS catalog update
      - Generated ACB is decoded, converted to catalog format, loaded into the catalog
        - DBD and PSB metadata created and inserted
        - Corresponding ACB member timestamp saved as timestamp in catalog DBD and PSB segments
          - ensures validity and consistency of ACBLIB and catalog
- New ACBGEN, DFS3UACB, and new Catalog Populate, DFS3PU00, utilities are the **only** updaters of the IMS catalog
  - IMS online and IMS batch regions will never update catalog data
  - IMS online and IMS batch regions will only retrieve data from the catalog

# IMS Catalog Additions Via New ACBGEN & Populate Utility



- New integrated ACBGEN process includes update to the IMS catalog
- DFSDFXxx PROCLIB member has the catalog information
- DFSMDA member used to dynamically allocate the catalog datasets

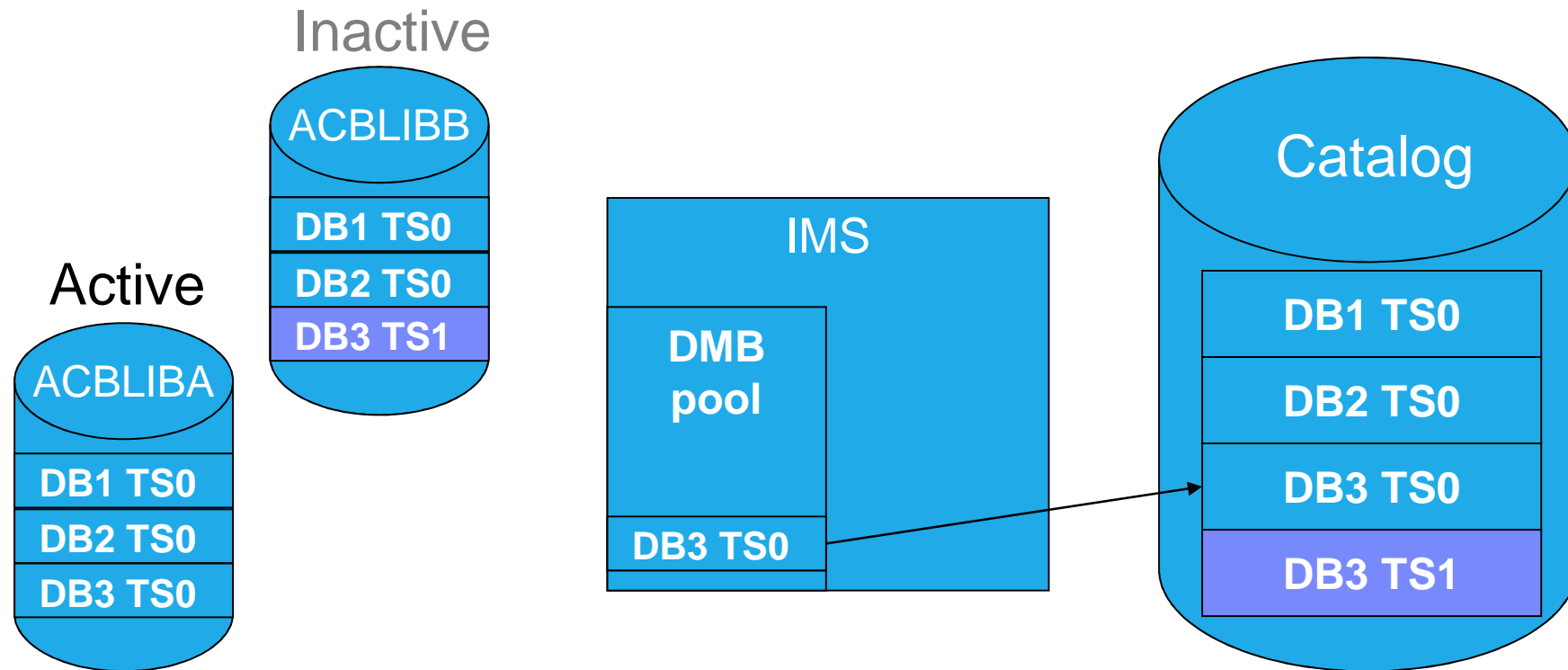
# ACBLIB and Catalog After New ACBGEN



- User makes a change to DB3 and runs ACBGEN
  1. Creates updated DB3 ACB member with new timestamp
  2. Creates new DB3 member in the catalog with new timestamp

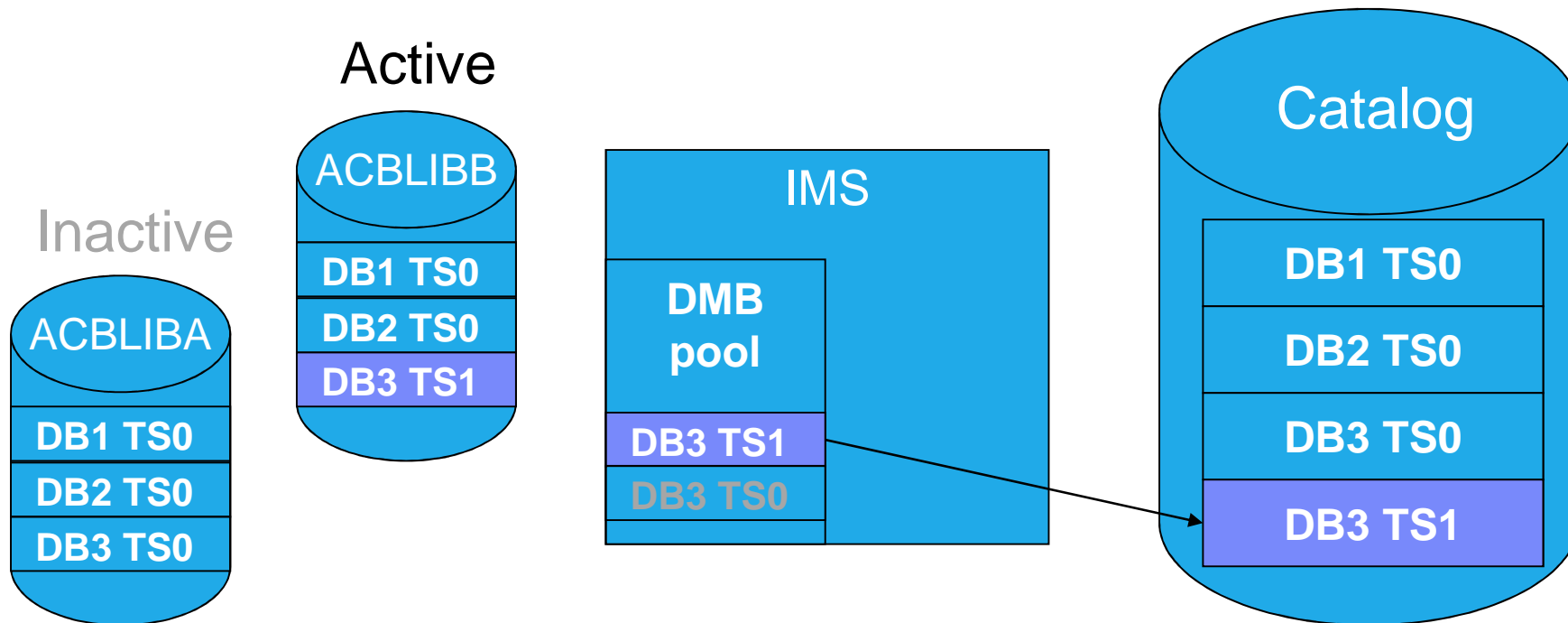
# Catalog Member Timestamps

- Java application request is made to read DB3
  - IMS determines active DB3 ACB member has timestamp TS0
  - Internal DL/I call issued to retrieve member DB3 from IMS catalog
  - IMS retrieves catalog member DB3 with timestamp TS0



# Catalog Member Timestamps

- Initiate OLC to switch from ACBLIBA to ACBLIBB
  - Activates DB3 ACB with timestamp TS1
- Java application request is made to read DB3
  1. IMS determines active DB3 ACB member has timestamp TS1
  2. Internal DL/I call issued to retrieve member DB3 from IMS catalog
  3. IMS retrieves catalog member DB3 with timestamp TS1



# IMS Catalog and ACBLIB Migrations



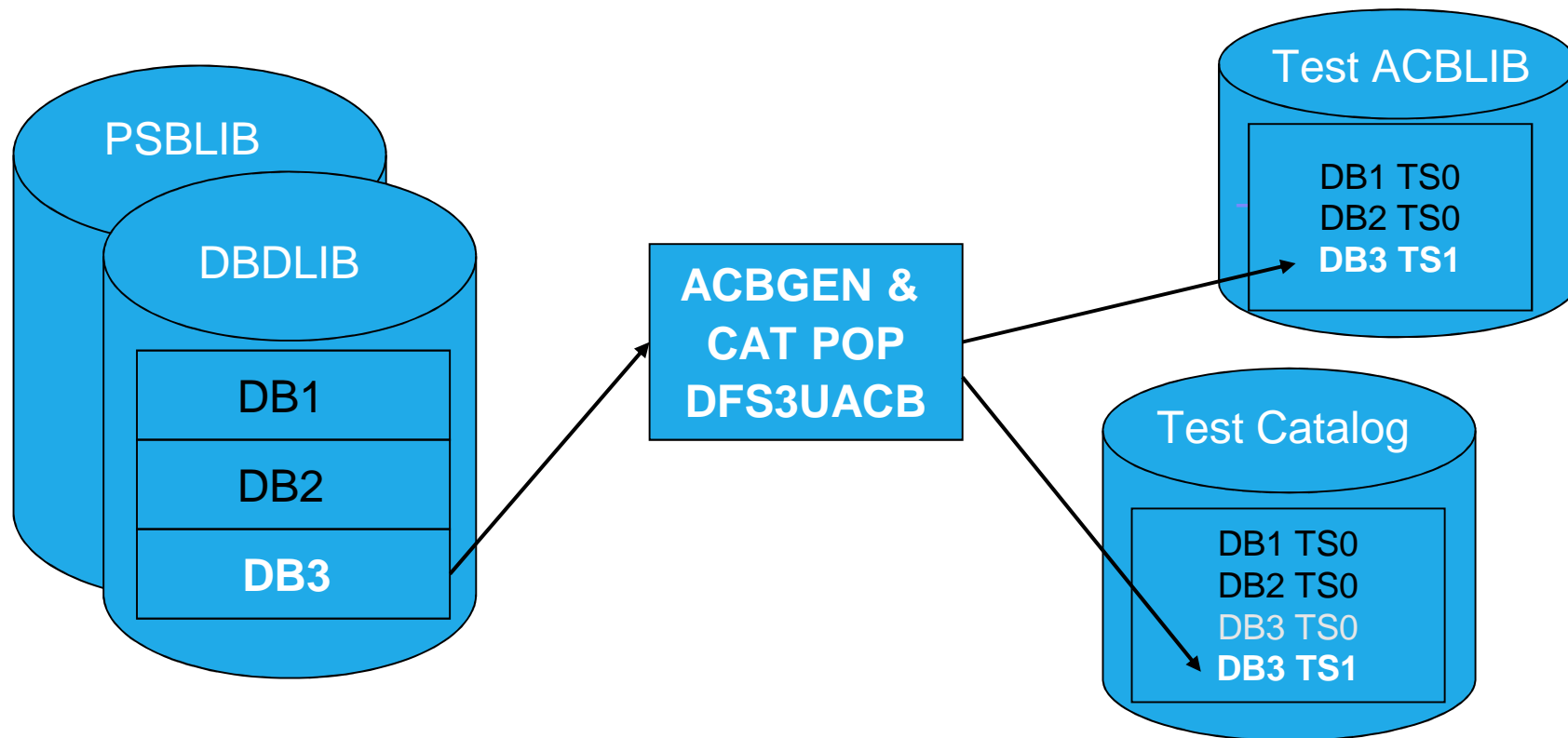
# Catalog and ACBLIB Migration from Test to Production



- Migration process for changed resources does not change significantly
- Use new ACB Generation and Catalog Populate utility, DFS3UACB
  - DFS3UACB replaces existing ACBGEN Utility DFSUACB0
- When copying ACB members from staging to inactive ACBLIB:
  - Use new IMS Catalog Copy Utility, DFS3CCU0
    - DFS3CCU0 replaces Online Change Copy utility DFSUOCU0
    - Ensures that the catalog and ACBLIB are kept in sync

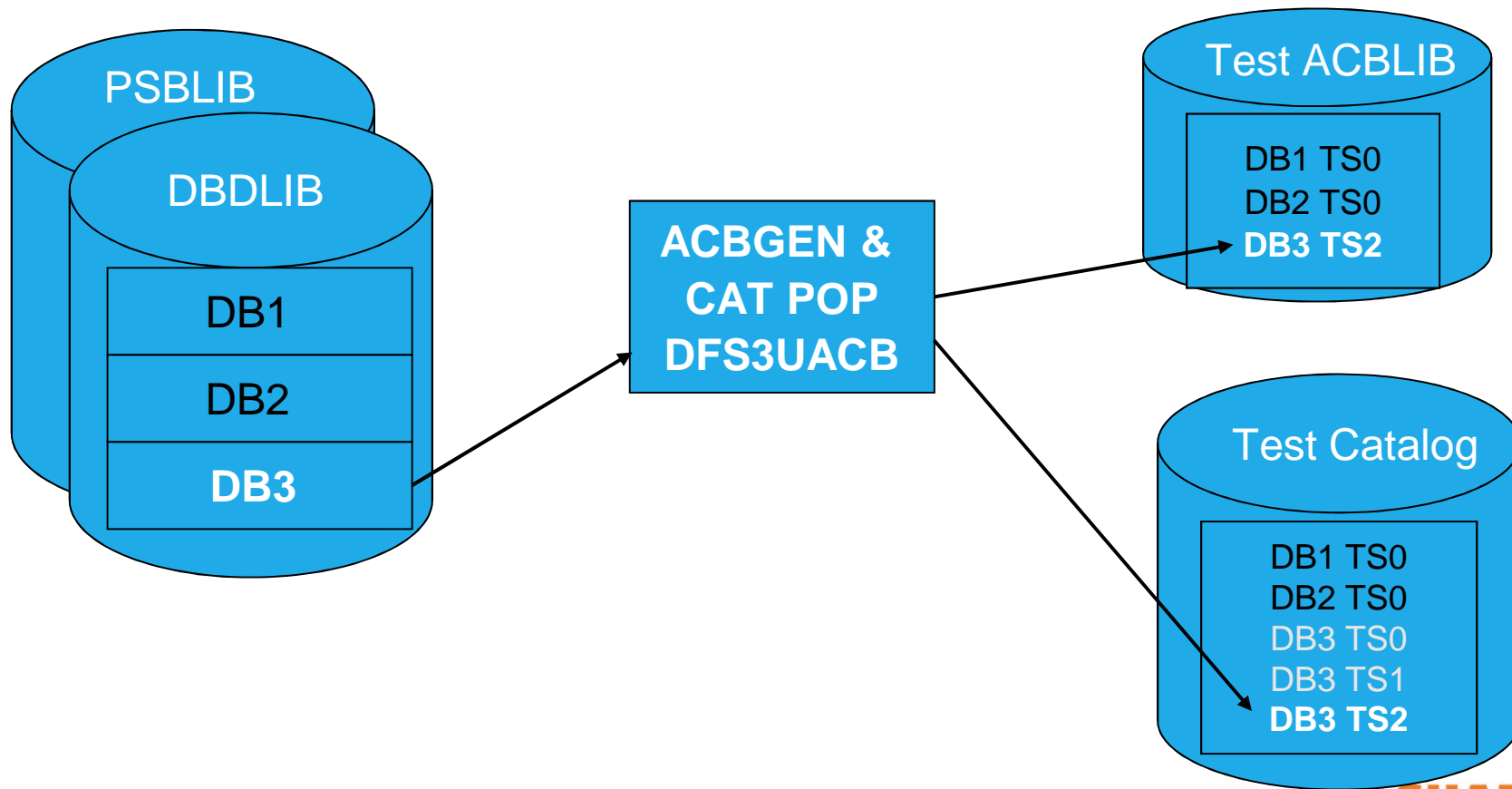
# Testing Environment - Step I

- Developer or DBA makes a change to DB3 and runs ACBGEN
  - Creates updated DB3 ACB member with new timestamp
  - Creates new DB3 member in the catalog with new timestamp



# Testing Environment - Step II

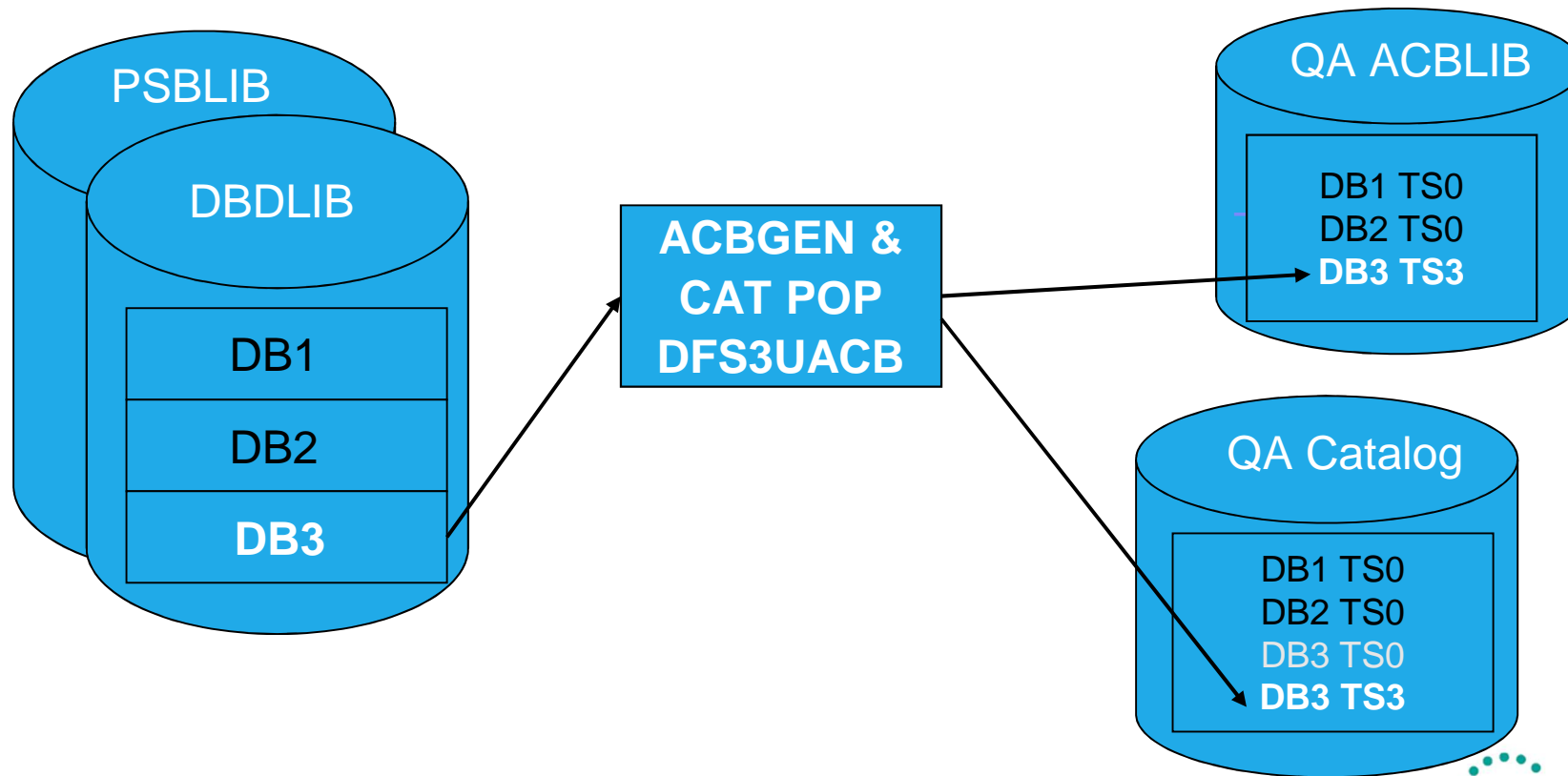
- Developer or DBA makes another change to DB3 and runs ACBGEN again
  - Creates updated DB3 ACB member with new timestamp
  - Creates another new DB3 member in the catalog with new timestamp



# QA Environment - Step III



- Developer testing is completed, ready for User testing in the QA system
  - 1.Run ACBGEN for DB3 into the QA ACBLIB and the QA catalog
  - 2.Creates updated DB3 ACB member with new timestamp
  - 3.Creates new DB3 member in the catalog with new timestamp



# Catalog and ACBLIB Migration from QA to Production



- Ready to propagate corresponding ACBLIB members and IMS catalog members between QA and PROD IMS environments
  - Need to copy ACBLIB members and corresponding catalog metadata
    - New Catalog Copy Utility, DFS3CCU0 (recommended method)
    - Catalog Populate Utility, DFS3PU00
- Catalog Copy Utility, DFS3CCU0, can be used for ...
  - Migration of resource changes from one IMS environment to another
  - IMS System cloning
  - Maintaining Disaster Recovery system
- Catalog Copy Utility, DFS3CCU0, is a two step process
  - Export step
    - creates an export data set based on catalog member from ACBLIB
  - Import step
    - uses export data set to write to both IMS catalog and ACBLIB
    - single step updates ACBLIB member and catalog metadata

# Catalog Copy Utility - DFS3CCU0 Export Step



- Exports member(s) from an input IMS catalog
  - Runs as an IMS Batch or BMP job
- Export process
  - Unloads a single catalog member at a time
    - Cannot export different versions of the same catalog member
  - Uses ACBLIB to get timestamp for a catalog member export
    - If no ACBLIB provided → copy all the catalog members
    - If no ACBLIB member found → copy the catalog member anyway
  - Read catalog member looking for the ACBLIB timestamp match
  - Write catalog member to the export data set
- Input
  - ACBLIB and corresponding IMS catalog
- Output
  - Export data set containing unloaded catalog members
  - Similar format and size as an unload data set

# Catalog Copy Utility – DFS3CCU0 Import Step



- Imports member(s) to an IMS catalog
  - Runs as an IMS Batch or BMP job
- Import process
  - Write catalog member from export dataset to the IMS catalog
  - Internal IEBCOPY of ACBLIB member that matches the catalog member timestamp
    - If no ACBLIB provided → skip the copy of all catalog members
    - If no matching ACBLIB member found → skip the catalog member copy
- Input
  - Input ACBLIB
  - Export data set containing unloaded catalog members
- Output
  - Output ACBLIB member and corresponding catalog member

# Scenario: IMS Resource Migration



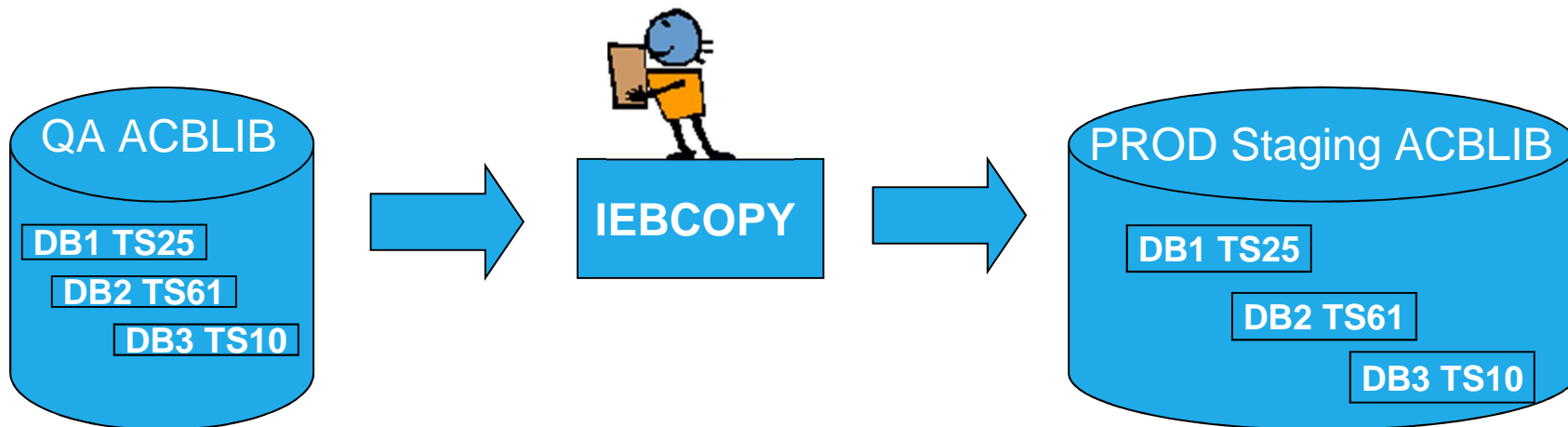
- Use the Catalog Copy Utility to migrate resource changes from one IMS environment to another
  - Example: Migrate IMS QA to IMS PROD environment
    - ACBGEN is done only in IMS QA environment
    - PROD Staging ACBLIB is clone of QA ACBLIB
      - same timestamps
    - ACBLIB members will determine which catalog members are copied to the production catalog
  - Process may vary slightly depending on method used for modifying IMS resources
    - OLC, GOLC, MOLC or IMS restart (if not using OLC)



# Migration to Production Environment - Step IV



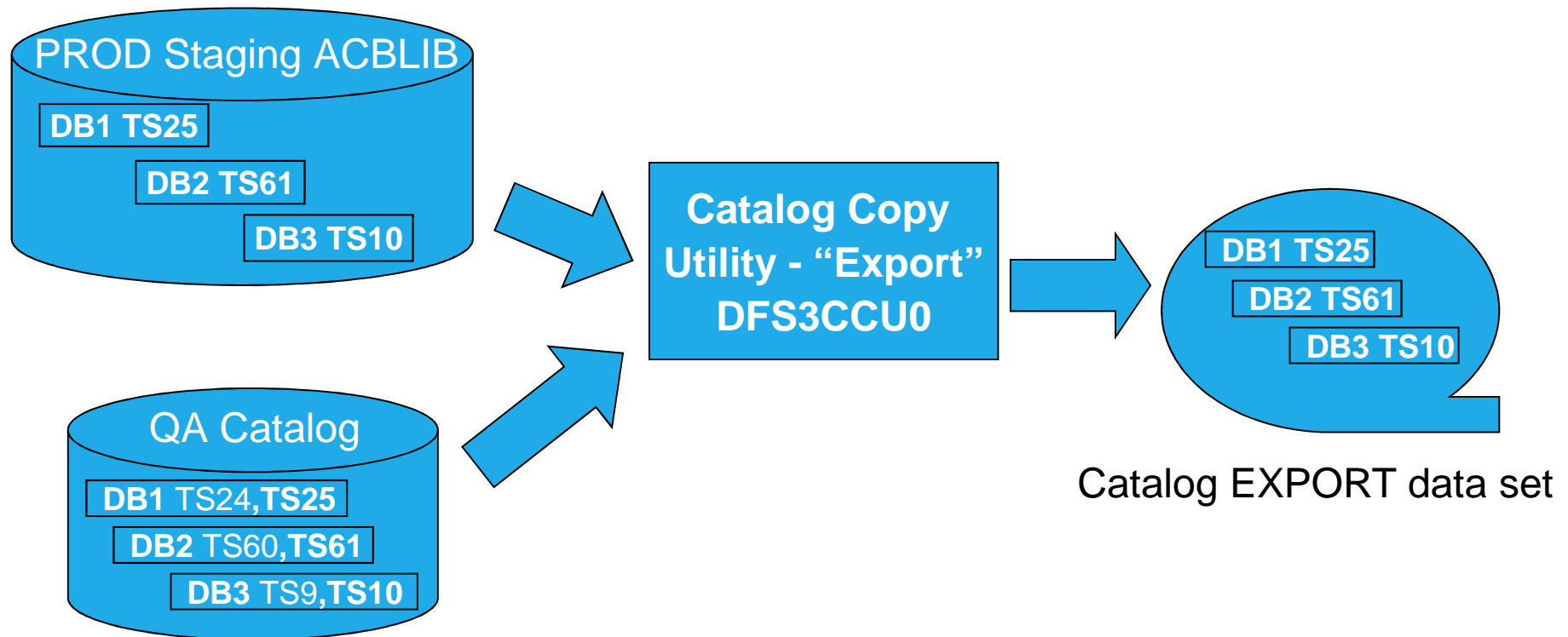
- User testing in the IMS QA system is completed, ready to migrate changes to the IMS PROD system
  1. Copy members from QA ACBLIB to PROD Staging ACBLIB



# Migration to Production Environment - Step IV



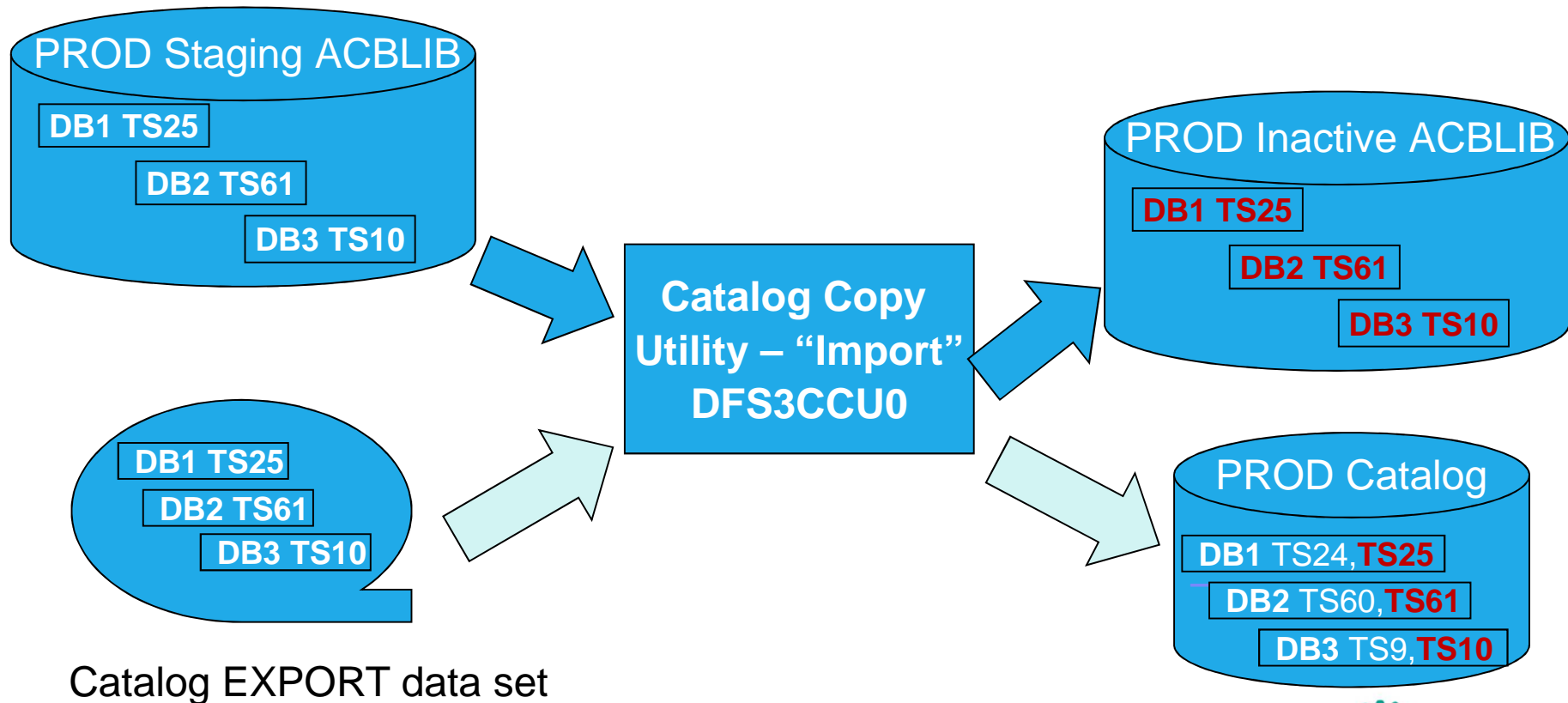
2. Export IMS QA catalog members that have a matching timestamp in PROD Staging ACBLIB



# Migration to Production Environment - Step IV



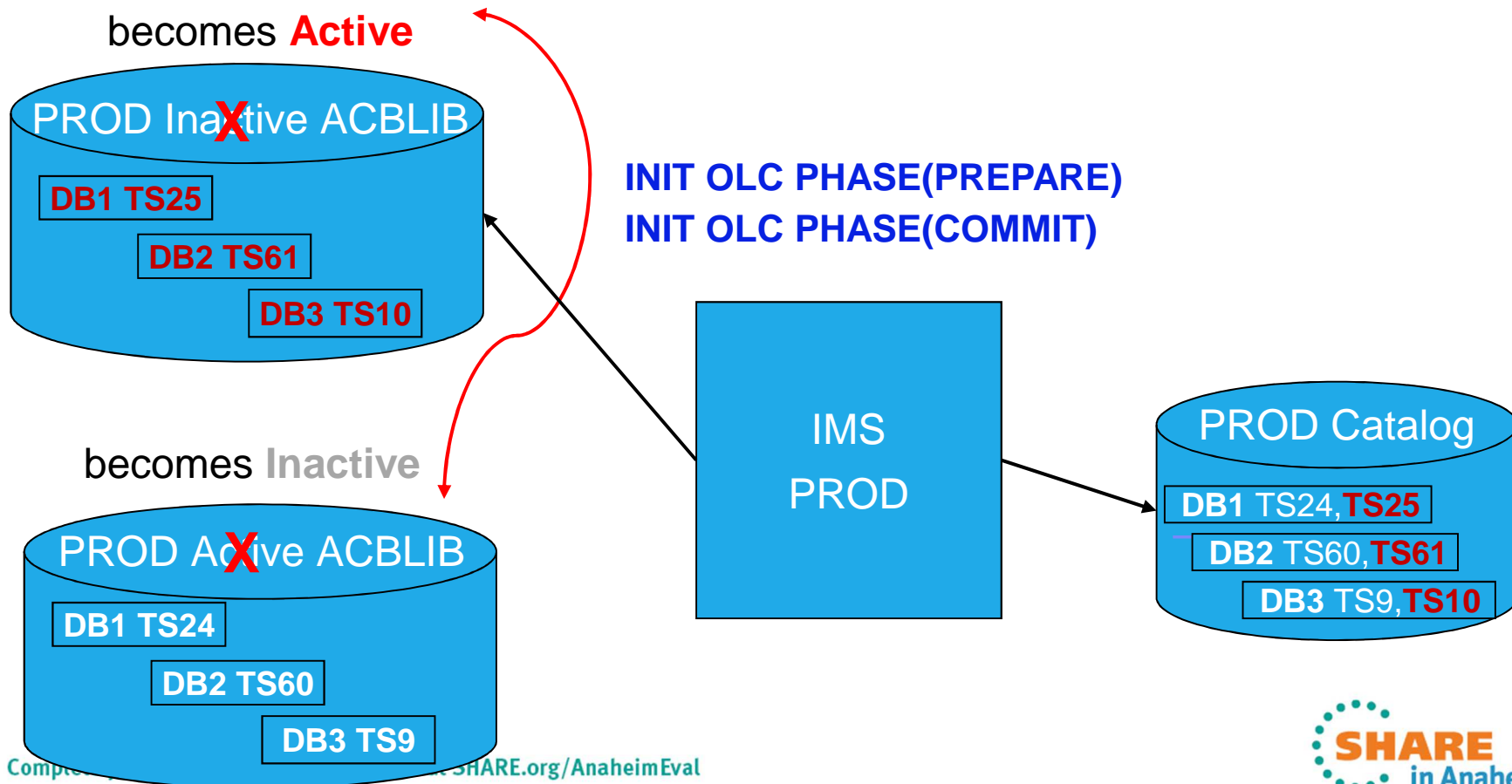
3. Import IMS catalog members and ACBLIB members into IMS PROD system
  - Catalog members from export data set migrated to IMS PROD catalog
  - ACBLIB members with timestamps matching catalog export data set members migrated from PROD Staging ACBLIB to PROD Inactive ACBLIB



# Migration to Production Environment - Step IV



- Operator issues OLC commands to bring the new ACB resources online
  - Inactive ACBLIB becomes active and active ACBLIB becomes inactive
  - Catalog has both active and inactive members



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# IMSplex Catalog Sharing

# IMS Catalog Sharing



- **Catalog Database Data Sharing**
  - One Catalog database can be defined and shared among IMS systems
  - Follows standard IMS data sharing protocols and procedures
  - Use standard processes for database management and monitoring
- **Non-Shared Catalog database**
  - A separate Catalog database can be defined for each IMS system
  - DFSDFxxx <SECTION=CATALOG> ALIAS parameter allows multiple Catalog databases to exist within same RECON
  - Catalog databases should not be shared if not registered with DBRC
  - Catalog Populate utility can be run as a BMP
    - Prevents a Catalog database outage when catalog updates needed

# IMS Catalog Sharing



- DFSDFxxx PROCLIB Member
  - Can be shared or not shared among multiple IMS systems
  - New CATALOG section differentiates whether catalogs are shared or not shared
    - If only one definition for <SECTION=CATALOG>
      - One shared Catalog database
      - ALIAS=**DFSC** recommended
    - If multiple definitions for <SECTION=CATALOG*imsid*>
      - *imsid* differentiates that a Catalog database is not shared
      - Replace “*imsid*” in section heading with four byte IMS ID of the IMS system that uses this specific CATALOG
        - <SECTION=CATALOG**IMS1**> or <SECTION=CATALOG**IMS2**>
      - Unique ALIAS=**xxxx** for each Catalog database
    - A standalone IMS system uses a DFSDFxxx member with one <SECTION=CATALOG> definition

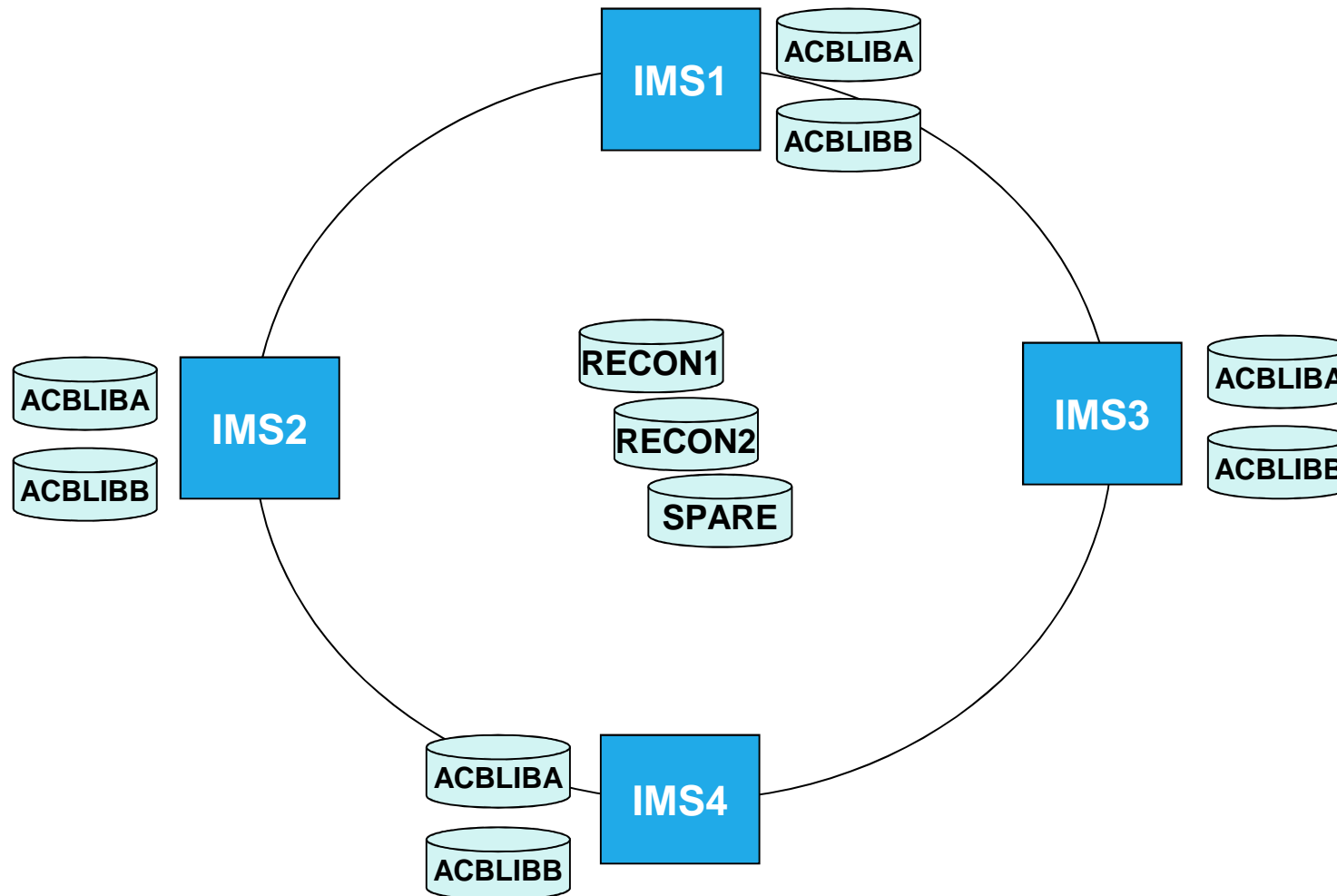


# IMS Catalog Sharing

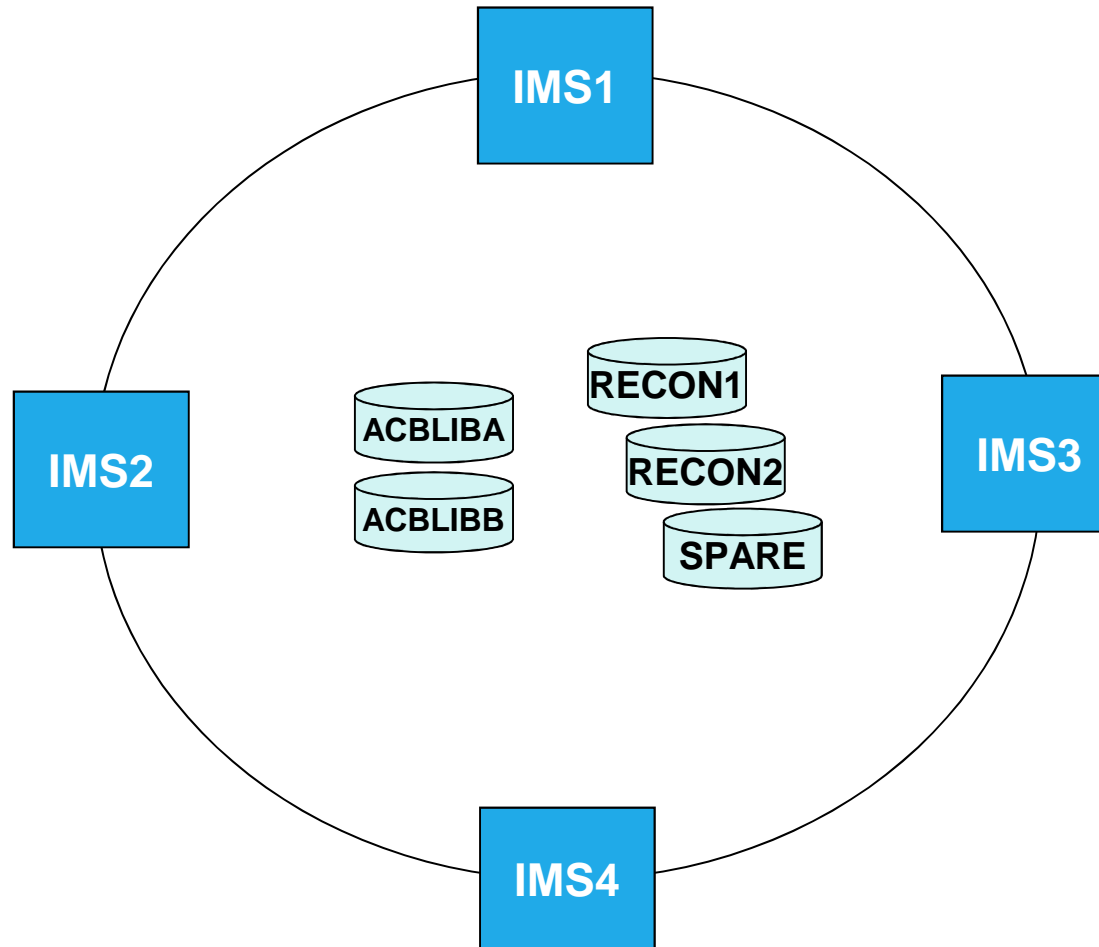


- Catalog ALIAS definition
  - Catalog database ALIAS names must be defined in the DBDLIB
    - Add ALIAS names to the Catalog database name list in your DBDLIB with the IMS Catalog ALIAS Names utility, DFS3ALI0
  - Alias name Catalog database must be defined in the RECON or the Catalog Partition Definition data set
    - Multiple Catalog databases may exist in the RECON
  - Alias name Catalog databases are not automatically maintained by IMS
    - User is responsible to keep Catalog databases in sync
    - Users with cloned ACBLIBs must have processes to keep ACBLIBs in sync during changes
      - Processes need to be modified to keep ACBLIBs and catalog in sync

# Without an IMS Catalog Multiple IMSes, each IMS has it's own cloned ACBLIBs



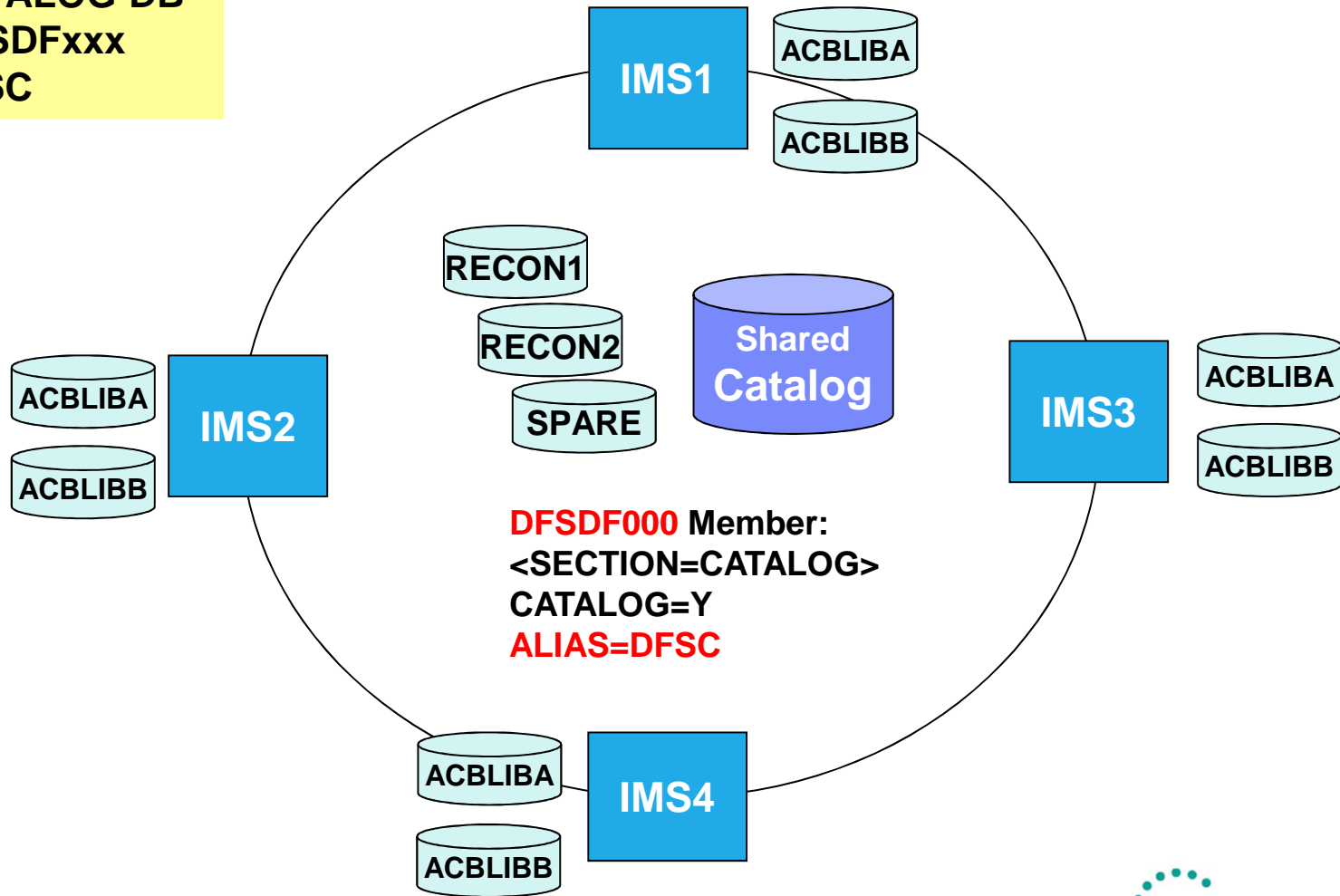
# Without an IMS Catalog Multiple IMSes, shared ACBLIBs



# Multiple IMSes, Cloned ACBLIBs, Shared Catalog

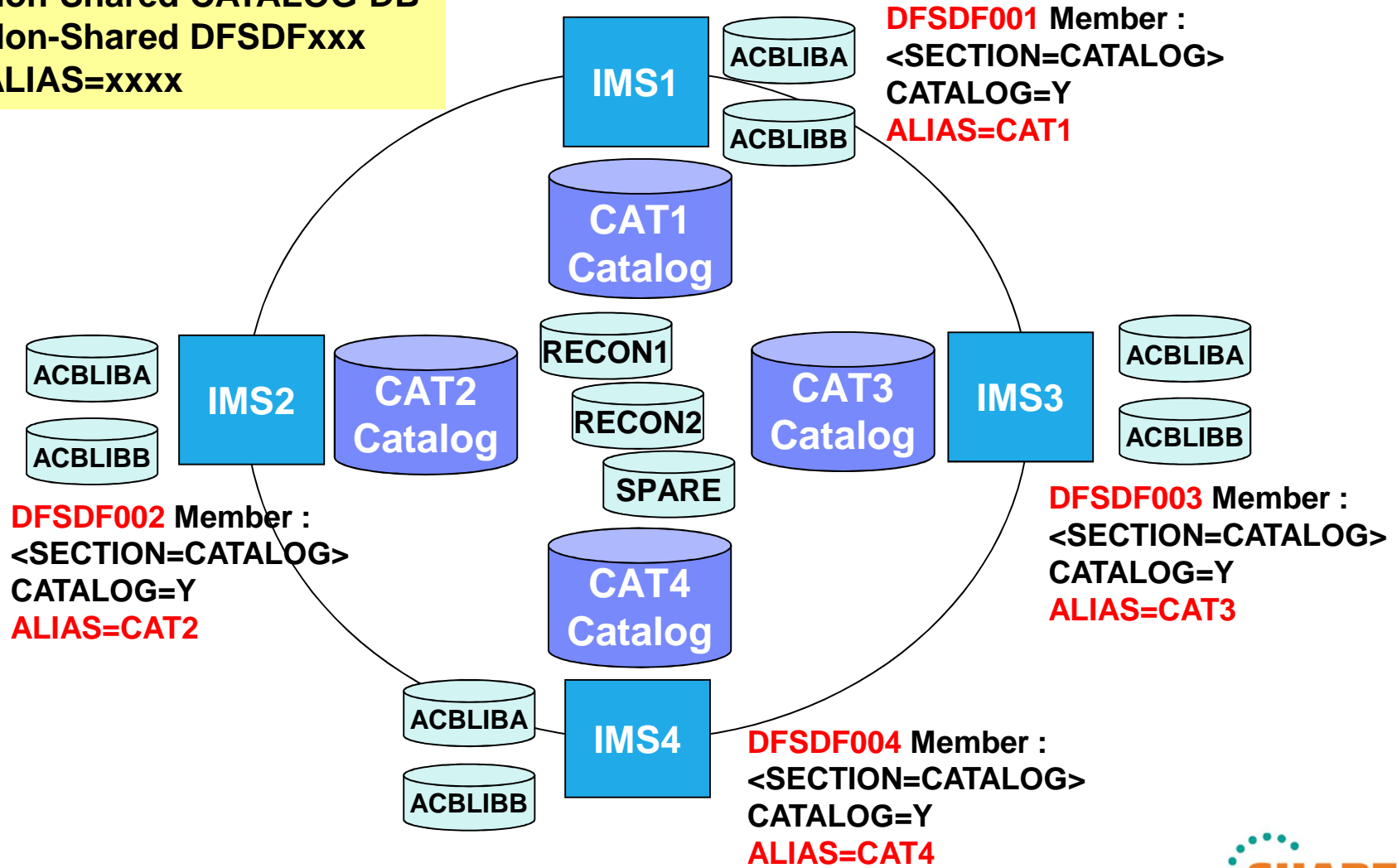


Shared CATALOG DB  
Shared DFSDFxxx  
ALIAS=DFSC



# Multiple IMSes, Cloned ACBLIBs, each IMS has it's own Catalog

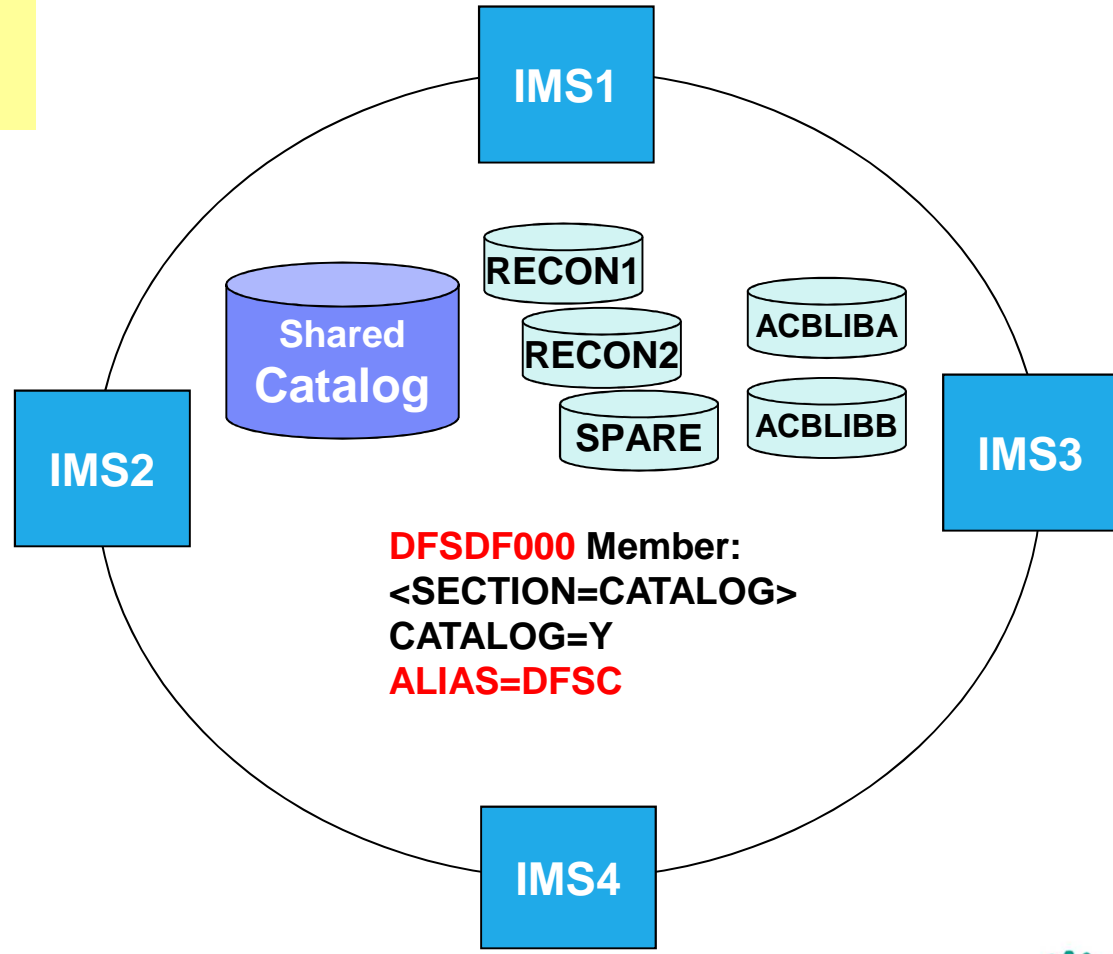
Non-Shared CATALOG DB  
 Non-Shared DFSDFxxx  
 ALIAS=xxxx



# Multiple IMSes, Shared ACBLIBs, Shared Catalog



Shared CATALOG DB  
Shared DFSDFxxx  
ALIAS=DFSC



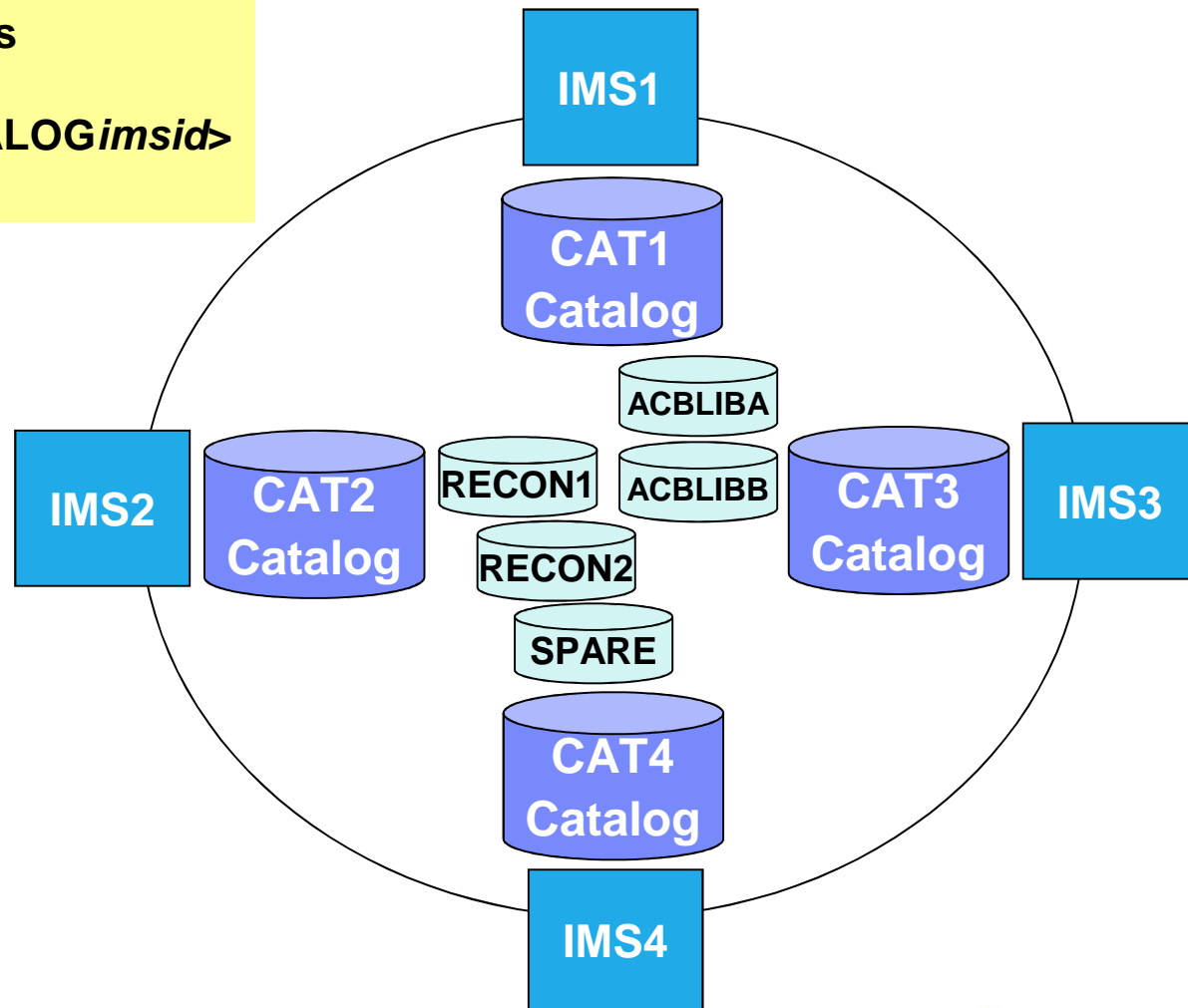
# Multiple IMSes, Shared ACBLIBs, each IMS has it's own Catalog



Non-Shared CATALOG DBs  
Shared DFSDFxxx  
Separate <SECTION=CATALOGimsid>  
ALIAS=xxxx

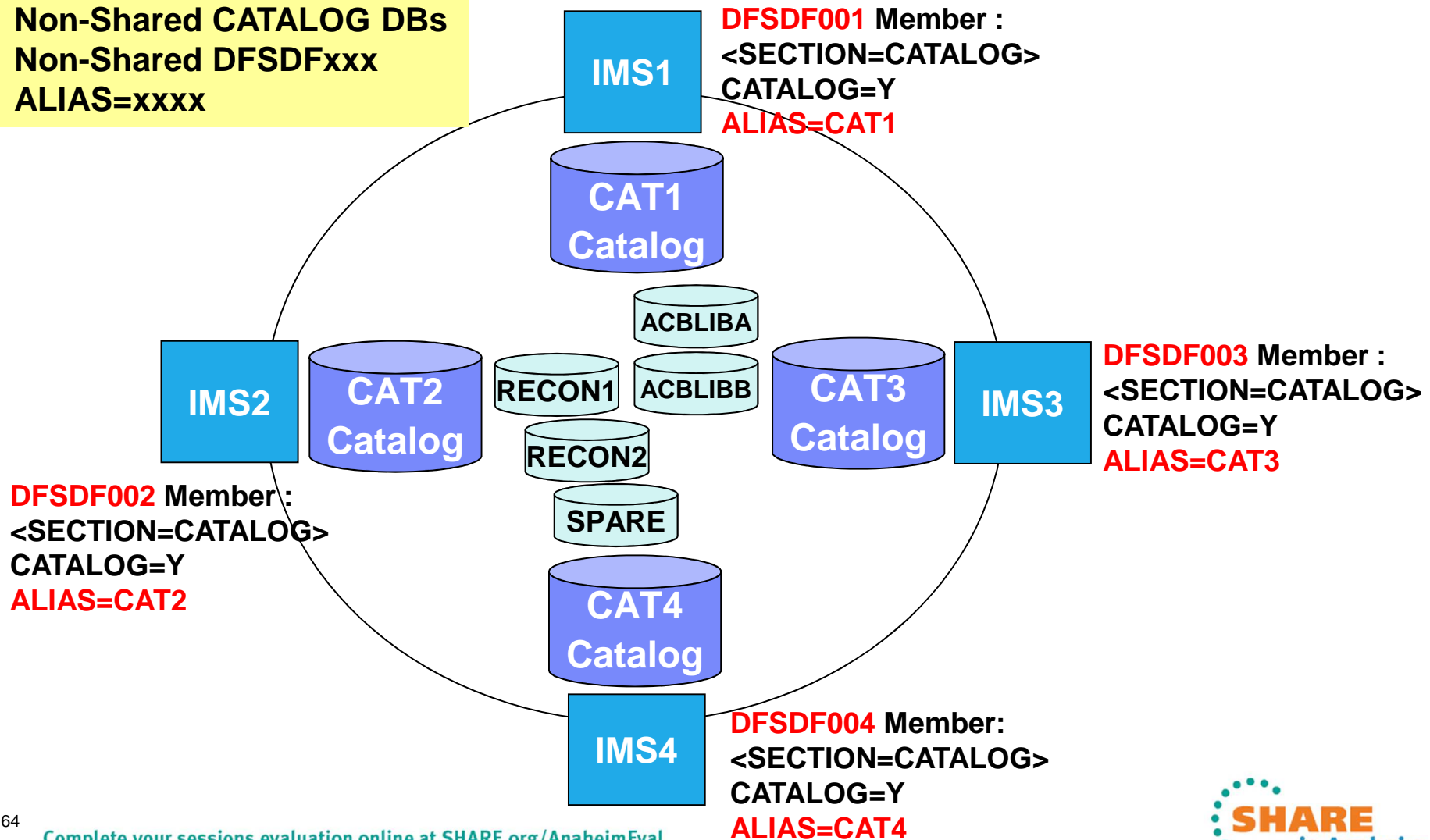
**DFSDF000** Member:

```
<SECTION=CATALOGIMS1>  
CATALOG=Y  
ALIAS=CAT1  
<SECTION=CATALOGIMS2>  
CATALOG=Y  
ALIAS=CAT2  
<SECTION=CATALOGIMS3>  
CATALOG=Y  
ALIAS=CAT3  
<SECTION=CATALOGIMS4>  
CATALOG=Y  
ALIAS=CAT4
```



# Multiple IMSes, shared ACBLIBs, each IMS has it's own Catalog

Non-Shared CATALOG DBs  
 Non-Shared DFSDFxxx  
 ALIAS=xxxx





# Additional Data Management Communities for IMS



## **The IMS Catalog:**

### **The Next Step in Simplification and Enterprise Integration**

Register for this teleconference replay by Nancy Stein from the IMS Advanced Technical Support team. She will share both the technical implementation of IMS Catalog as well as the business value you stand to gain.

<http://www-01.ibm.com/software/sw-events/teleconference/D108305C25358T22.html>

## **IMS Enterprise Suite Explorer:**

### **The new face of IMS**

Register for this teleconference replay by Nate Church and Will Li from the IMS Development team at SVL.

The IMS Explorer is the new face of IMS: an Eclipse-based graphical tool that simplifies IMS application development tasks.

<http://www-01.ibm.com/software/sw-events/teleconference/T929253D59548D24.html>

# Additional Data Management Communities for IMS



- **Data Management Community** – share and interact on all Data Management topics with peers around the world
  - [www.ibm.com/software/data/management/community.html](http://www.ibm.com/software/data/management/community.html)
  - Links to Blogs, Twitter, Facebook, YouTube, LinkedIn, Communities, Forums
- **IMS developerWorks**
  - <https://www.ibm.com/developerworks/data/products/ims/>
- **IMS Application Development Forum**
  - [www.ibm.com/developerworks/forums/forum.jspa?forumID=1632](http://www.ibm.com/developerworks/forums/forum.jspa?forumID=1632)
- **Rational Cafes** – for host application programming languages
  - [www.ibm.com/software/rational/cafe/index.jspa](http://www.ibm.com/software/rational/cafe/index.jspa)
- **Information Champions** – recognized individuals who have made outstanding contributions to the Information Management community
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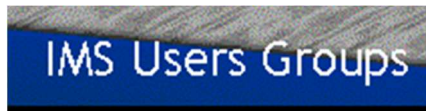


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