IBM Information On Demand

IBM

The IMS Common Service Layer - Can You Live Without It?

Alan Cooper
alan_cooper@uk.ibm.com
IMS Consultant

TAKE BACK CONTROL

Introduction

- **The IMS Common Service Layer (CSL) was introduced as an option in IMS 8**
- **In IMS 8 and IMS 9, many customers thought that there was insufficient benefit to be gained by implementing the CSL**
- **IMS 10 adds extra CSL function and greatly increases the attractiveness of CSL**
  - It provides the operator interface “of choice”
  - It is no longer just for the large IMSplex user, but for the single IMS system user as well
  - It is the prerequisite for several new major functions
- **The IMS Developers assume that the CSL is in place when designing new features and enhancements**
  - IMS 11 illustrates the point!
- **This presentation reviews the CSL and discusses the range of features available in IMS 10 that exploit the CSL**

Agenda

- **What is the CSL?**
- **Enhanced Operations Management**
- **Enhanced Resource Management**
  - Dynamic Resource Definition
  - Enhanced Online Change Functions
- **Sysplex Terminal Management**
- **Other CSL Facilities**
  - DBRC ARLN and PRA
  - Transaction Level Statistics
  - Global Status
  - MSC Bandwidth Statistics
  - Serial Programs in SQ Environment
  - LE Dynamic Runtime Options
  - Queue Control Facility (QCF)
  - Command Control Facility (CCF)
- **IMS 11 and CSL**

What is the Common Service Layer?

Common Service Layer

- **Common Service Layer (CSL)**
  - An architecture, not an address space
  - Introduced in IMS 8

- **Three* new types of address space built on the Base Primitive Environment (BPE)**
  - Structured Call Interface (SCI)
  - Operations Manager (OM)
  - Resource Manager (RM)

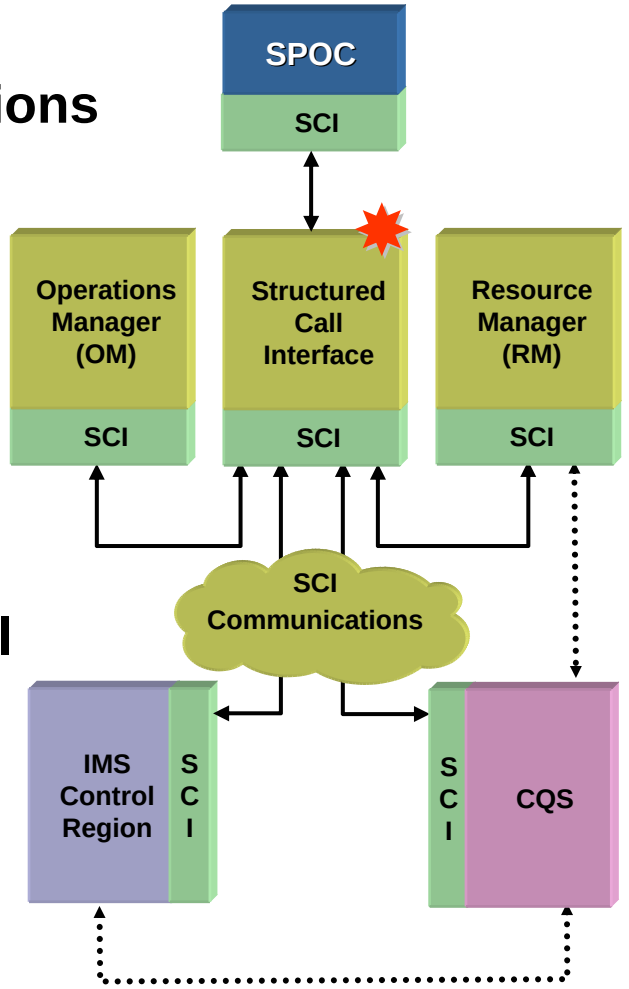
} Not all new functions require all three

- **Purpose**
  - Infrastructure for system management tasks in one or multiple IMS systems within an IMSplex
  - Foundation for new IMS functions as well as Parallel Sysplex enhancements

* IMS 11 adds ODBM as a new CSL address space

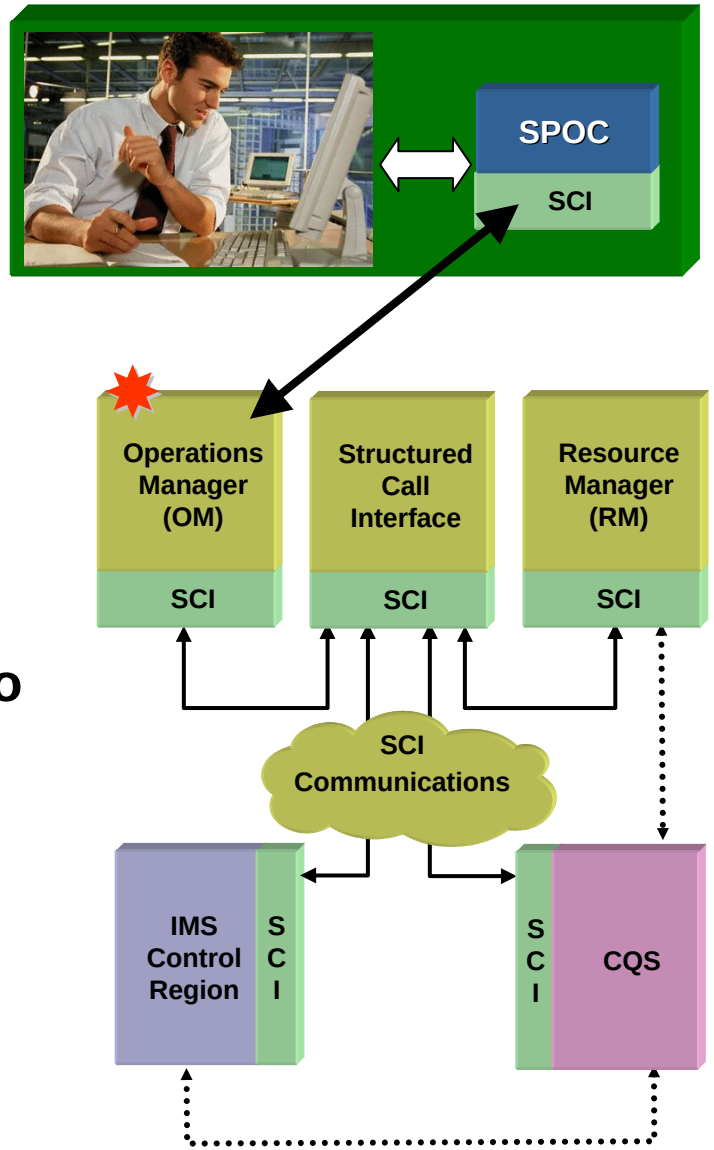
Structured Call Interface (SCI)

- **SCI provides a high performance communications facility between IMS address spaces**
  - Within a single z/OS
  - Across z/OS systems, using XCF
- **The code sits in the SCI Address Space**
  - Executed in cross-memory mode
  - An SCI AS must exist on every z/OS where there is an IMS address space (including SPOCs)
- **Used, for example, by a Single Point of Control (SPOC) talking to an Operations Manager, and by an Operations Manager talking to an IMS Control Region**
- **Each IMS address space registers with SCI to join a named IMSplex**
  - Security check performed



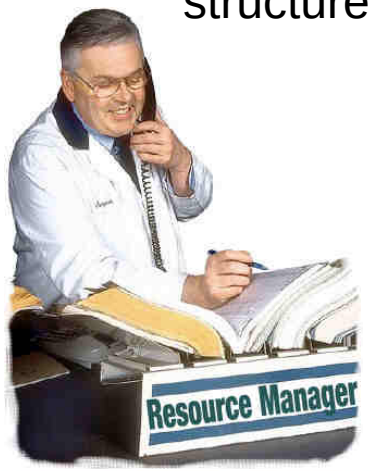
Operations Manager (OM)

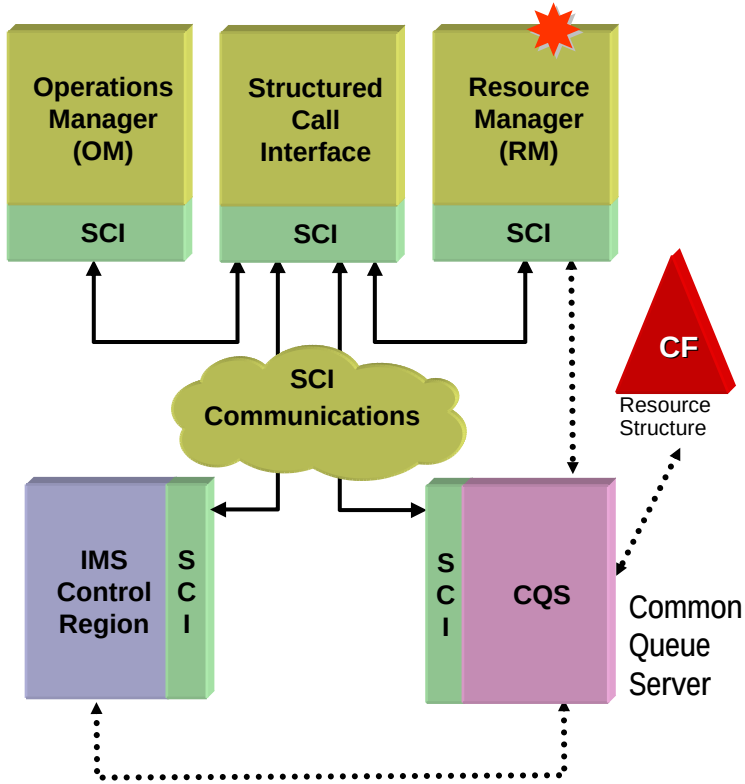
- **Accepts IMS commands from a Single Point of Control (SPOC)**
- **Routes the command to one or more IMS Control Regions**
- **Can perform command security**
  - Typically instead of in each IMS Control Region
  - RACF and/or user exit
- **Gets back all the command responses and consolidates them into a single response to the SPOC**
  - In XML format
  - SPOC is responsible for interface to user
- **An IMSplex can contain one or more OMs**



Resource Manager (RM)

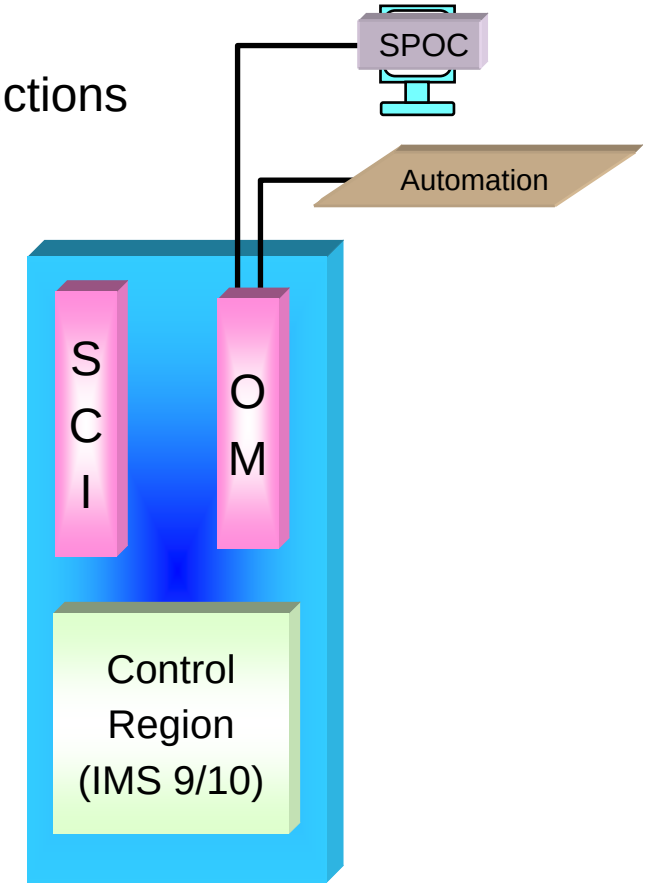
- **Responsible for managing global resource status (e.g. VTAM terminal status) and IMSplex-wide processes (e.g. global online change)**
- **You can have one or multiple RMs in an IMSplex**
- **When there is more than one RM, global information is maintained in a Resource Structure in the CF**
- **The RM uses CQS to manage the Resource Structure**
  - As for shared queues, the resource structure is a List Structure





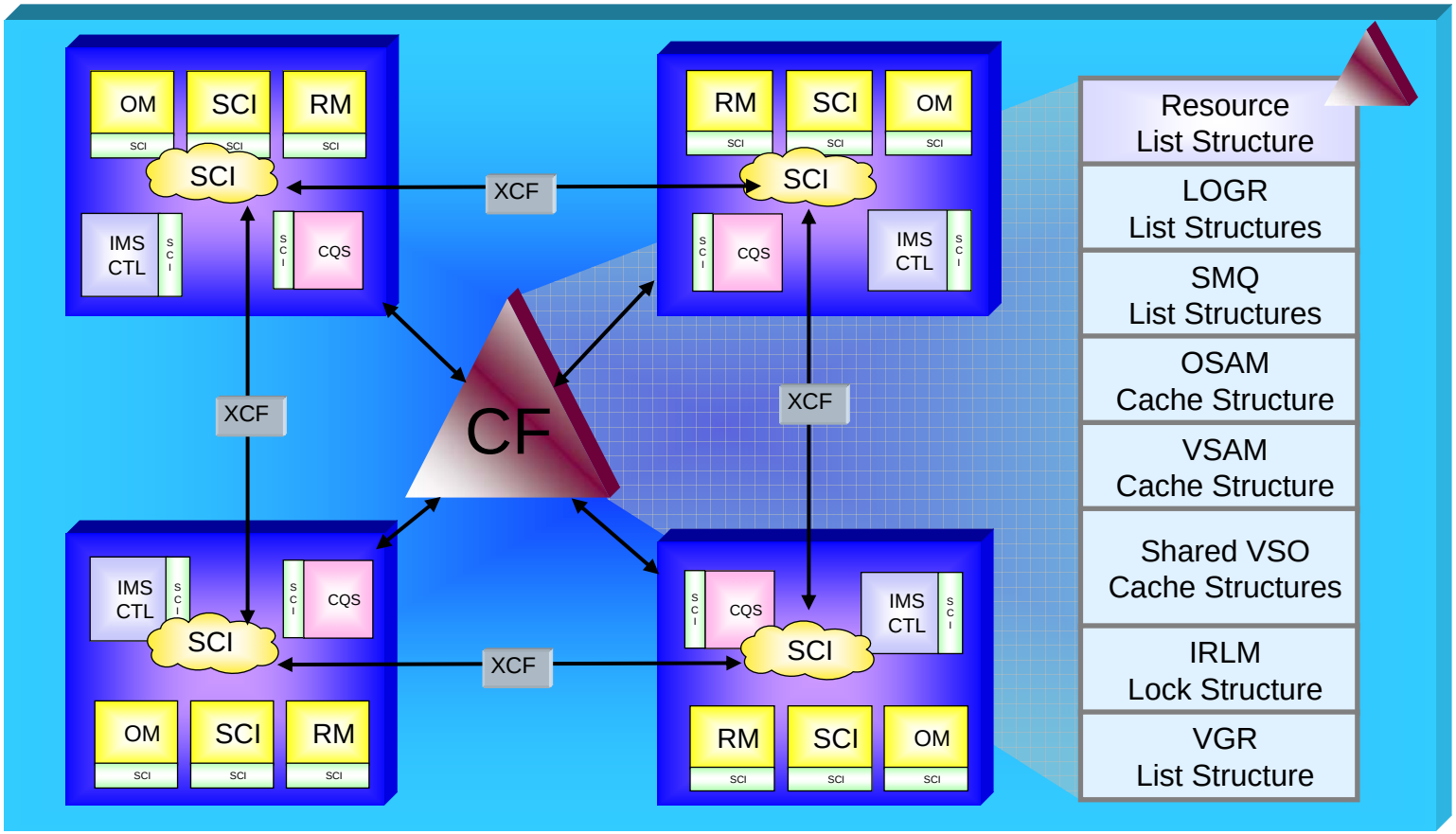
Single-IMS IMSplex Configuration

- **Allows Single-IMS-System user (i.e. no data base sharing and no queue sharing) to exploit new facilities**
  - SPOCs and the new operations interface and functions
  - DBRC Automatic RECON Loss Notification
  - Dynamic Resource Definition (IMS 10)
  - ACB Member Online Change (IMS 10)
  - Dynamic LE Runtime Options
  - etc. etc. etc.
- **Might be first step in migration to a more robust IMSplex**
- **IMS 9/10 has a system parameter to request this configuration**
  - In this case, IMS can automatically start the SCI and OM address spaces



IMS 8 always requires a RM as part of the CSL

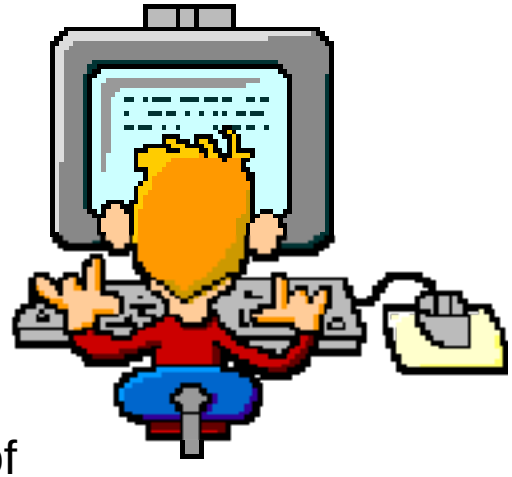
Multi-IMS IMSplex Configuration



- **Provides “the ultimate” configuration for operation and management of capacity, performance and availability**

Enhanced Operations Management

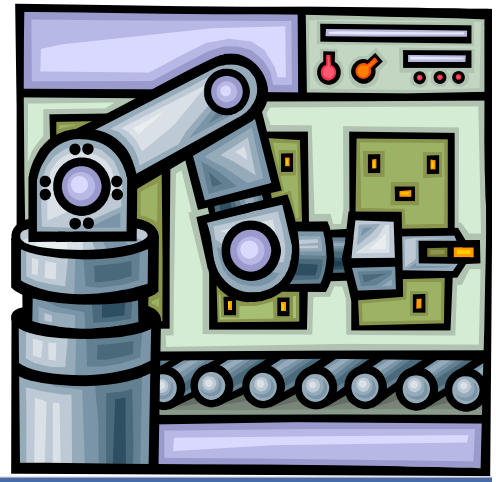
Traditional IMS Operations



- **Traditionally, IMS online systems have been operated from an IMS Master Terminal and/or a zOS Console**
  - Primary MT = display terminal formatted by MFS
  - Secondary MT = printer acting as a “hard copy” journal of key activity
- **Over the years, about 60 different operator commands have evolved**
  - **`/START`**, **`/DBR`**, **`/ASSIGN`**, etc.
- **These are referred to as “Type 1” commands**
  - Not necessarily designed with usability in mind
  - Lacking consistency and standards
  - Not intuitive – especially for a new breed of young operators
  - Mostly entered and executed on a single IMS system
    - Not convenient for operation of multiple IMSs as a single system image

Operations with the CSL

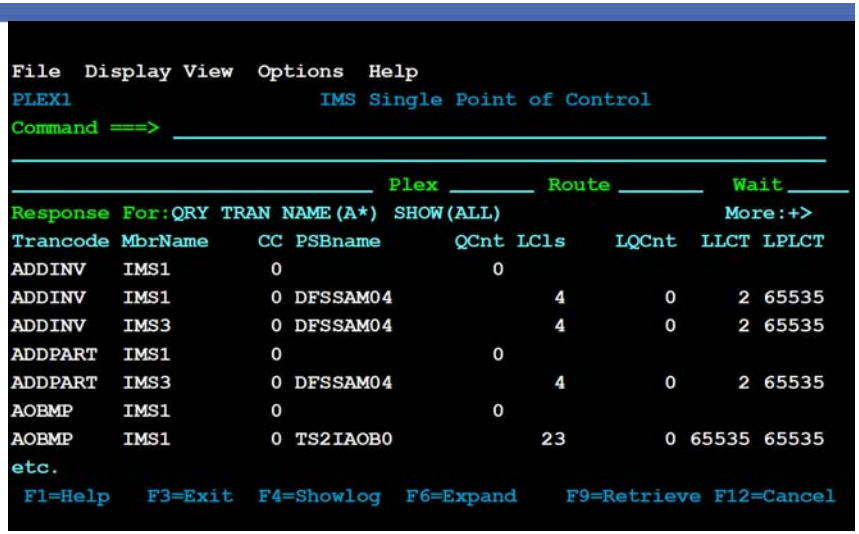
- **CSL enables the use of a completely new Operations Interface**
  - **Single Point of Control (SPOC)**
    - A SPOC is a program that enters commands to an Operations Manager
- **Some SPOCs provide an interface for human operators**
  - TSO SPOC (an ISPF application)
  - IMS Control Center (a PC-based operator interface)
- **Some SPOCs are components of automated operations**
  - REXX SPOC
  - Batch SPOC (IMS 10)
- **SPOCs can use traditional type-1 or the new type-2 commands**
- **Commands can be routed to one or multiple IMS systems (via an OM)**
- **SPOC receives back a consolidated response**



Type 2 Commands

- **Provide simpler, intuitive, user-friendly resource management**
  - **QUERY** and **UPDATE**
    - Alternatives for **`/DIS`**, **`/START`**, **`/STOP`**, **`/ASSIGN`**, **`/DBR`**, etc
  - Resources managed in IMS 10
    - TRAN, RTC, PGM, DB, AREA, DATAGRP, and MSPLINK, MSLINK, MSNAME
- **Many commands include wildcard and filter support to identify target resources**
- **Some UPDATE commands provide function not possible with a single type-1 command**
  - E.g. Starting a DEDB and all its AREAs
- **Other type-2 commands provide support for new facilities**
  - **INIT**, **TERM**, **DELETE**, **CREATE**, **IMPORT**, **EXPORT, QUEUE**

The TSO SPOC



- **Type-2 Command replies – especially result of QUERY command – are displayed as a table**
  - Can sort on different columns
- **Can enter commands to multiple IMS systems and get back a consolidated response**
- **Can look back at earlier commands and their responses, and edit and re-enter the commands**
- **Can set up short cuts for frequently used commands**
- **Special support for new functions such as Dynamic Resource Definition**
  - To simplify the command interface
- **SPOCs are needed for several new systems management functions**
  - DRD, ACB Member Online Change, MSC statistics, etc

Additional Operations Facilities

- **Operation of an IMS system or IMSplex requires more than just an operator interface**

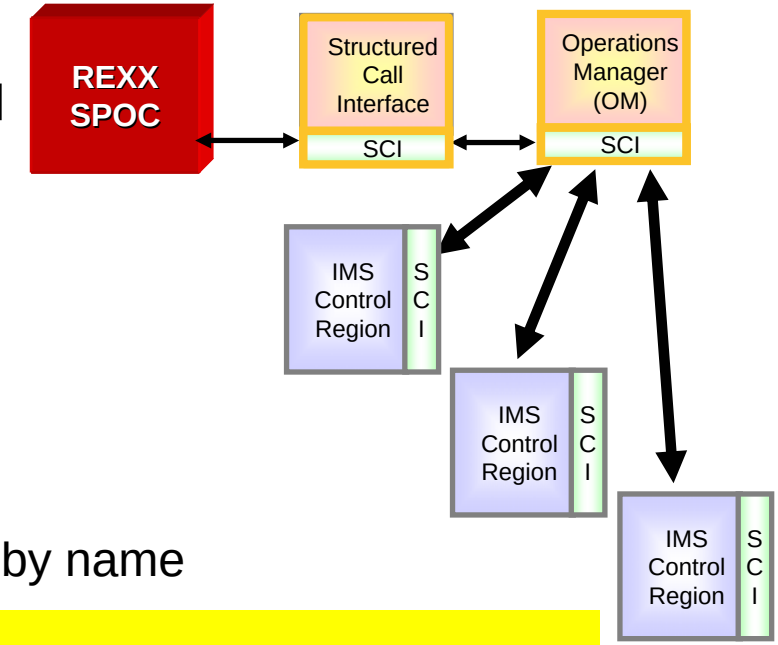
- **It requires additional functions in the areas of -**
  - Automation
  - Entering of automation transactions
  - Command auditing
  - Viewing of unsolicited system messages

- **These facilities are all available in IMS 10**

Automation – the REXX SPOC

Enhanced in IMS 10

- **Runs under TSO or Netview**
- **Can execute in a different z/OS from OM**
  - Uses SCI to communicate with OM
- **Command responses saved to a REXX "stem variable"**
  - In XML format
- **IMS 10 provides an XML parser**
  - Individual XML elements can be referenced by name




```
"QRY TRAN NAME(CUS*)"
results = CSLULGTS('qryinfo.',cartid, '1:30')
```

- qryinfo.cmd.verb is "QRY"
- qryinfo.hdr.6.llbl is header label for column 6 of the QRY response
- qryinfo.rsp.2.3 is column 3 of row 2 of the QRY response

Results in greatly simplified REXX programming

Automation - Batch SPOC Utility

- **Provides a capability to submit IMS commands from a batch job**
  - Uses the Operations Manager (OM) interface
  - Supports both Type-1 and Type-2 commands
- **IMSplex environment defined in execution parameters**
  - IMSplex name, Command routing, and Wait time
- **Commands defined in SYSIN file**
  - Multiple commands allowed
  - Commands executed serially
- **Output to SYSPRINT**
  - Responses formatted to look like TSO SPOC screen format

```
Log for:  QRY TRAN NAME(A*) SHOW(ALL)

 IMSplex . . . . . : PLEX1
 Routing . . . . . : IM1A
 Start Time. . . . : 2007.304 01:08:08.13
 Stop Time . . . . : 2007.304 01:08:08.13
 Return code . . . : 00000000
 Reason code . . . : 00000000
 Reason text . . . :
 Command master. . : IM1A


    Response for: QRY TRAN NAME(A*) SHOW(ALL)
    Trancode MbrName    CC CCText PSBname  LCls    LQCnt  LLCT LPLCT LPLCTTime
    ------------------------------------------------------------------------
    ADDINV   IM1A        0        DFSSAM04    1        0     2 65535   6553500
    ADDPART  IM1A        0        DFSSAM04    1        0     2 65535   6553500
    AUTRAN11 IM1A        0        AUTPSB11    1        0     2 65535   6553500
    AUTRAN12 IM1A        0        AUTPSB11    1        0     2 65535   6553500
```

QUEUE Command

- **QUEUE command (type 2 – via a SPOC) can be used to:**
  - **Enter a transaction**
    - Intended for automation transactions
  - **Enter an LTERM message**
  - **Dequeue first or all messages queued to Transaction**
    - New function for non-shared queues users
  - **Dequeue first or all messages queued to an LTERM**

```
QUEUE TRAN NAME(xxx) OPTION(ENQ) DATA(message-data)
QUEUE LTERM NAME(xxx) OPTION(ENQ) DATA(message-data)
QUEUE TRAN NAME(xxx) OPTION(DEQ1 | DEQALL)
QUEUE LTERM NAME(xxx) OPTION(DEQ1 | DEQALL)
```

- **Reply (if any) from QUEUEd transaction is sent to Audit Trail**
  - Can be viewed at TSO SPOC

OM Audit Trail

- **OM can use z/OS System Logger to log -**
  - **Commands** entered via OM, …
  - … and their **Responses**
  - **Unsolicited messages** from IMS and CSL address spaces

  … to an "audit trail log stream"
  - Tailoring of which unsolicited messages get logged is possible
- **Multiple OMs can share the same log stream**
- **Audit trail can be viewed directly from a TSO SPOC**
- **Audit trail can be printed with enhanced DFSERA10**
- **REXX SPOC (for example) can dynamically subscribe to the audit trail**
  - Receive audit trail log messages in real time
- **Use of Secondary Master to journal unsolicited messages can also be controlled**
  - Disabled by command **`/SMCOPY MSG OFF`**
  - Dynamic selection by enhanced Type-2 AOI Exit (DFSAOE00)

Audit Trail Display from TSO SPOC

```
PLEX1                          IMSplex Audit Trail
 Command ===>

                                          Members . .           Type . .
                                                                 More:    +>
MbrName  Time                    Message
IM1A     2007.298 09:25:49.60 DFS3499I ACTIVE DDNAMES: MODBLKSA I
IM1A     2007.298 09:25:49.61 DFS3804I LATEST RESTART CHKPT: 0729
COUGHTA  2007.298 09:33:32.60 Cmd input . : DIS OLDS
COUGHTA  2007.298 09:33:32.60 Response for: DIS OLDS
COUGHTA  2007.298 10:26:29.28 Cmd input . : QRY TRAN NAME(*) SHOW(TIM     MP)
COUGHTA  2007.298 10:26:29.28 Response for: QRY TRAN NAME(*) SHOW(TIMESTAMP)
COUGHTA  2007.298 10:26:51.44 Cmd input . : QRY TRAN NAME(*) SHOW(TIMESTAMP)
COUGHTA  2007.298 10:26:51.44 Response for: QRY TRAN NAME(*) SHOW(TIMESTAMP)
COUGHTA  2007.298 12:52:56.87 Cmd input . : QUEUE TRAN NAME(PART) DATA(an960c10)
COUGHTA  2007.298 12:52:56.87 Response for: QUEUE TRAN NAME(PART) DATA(an960c10)
IM1A     2007.298 13:00:01.07 DFS3257I ONLINE LOG NOW SWITCHED - FROM DFSOLP00 T
IM1A     2007.298 13:00:01.08 DFS058I 14:00:
IM1A     2007.298 13:00:01.10 DFS3257I ONLINE LOG NOW                          T
IM1A     2007.298 13:00:01.29 DFS2484I JOBNAME=IVPGNJCL                        T
IM1A     2007.299 11:30:49.53 DFS2864I EXTERNAL TRACE D                        W
IM1A     2007.299 13:00:01.08 DFS3257I ONLINE LOG NOW S                        T
```

Click on this to see the actual command response

Click on DFS message to gain internet access to M&C manual

- **Unsolicited messages are colour coded (I, W, A)**

Enhanced Resource Management

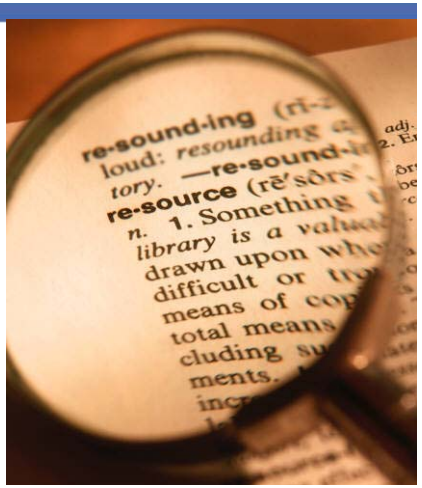
- Dynamic Resource Definition (DRD)
- Global Online Change

Without Dynamic Resource Definition

- **Each IMS system must have a definition of its resources**
  - Databases, Transactions, Programs and Fastpath Routing Codes
    - The "**MODBLKS resources**"
  - Created in the MODBLKS dataset by the IMS System Definition process
    - Stage 1 input (Assembler Macros) can be very large and requires careful management

- **The definitions can be changed with Online Change, but:**
  - **Requires the complete set of resource definitions to be re-built every time**
    - Even for a change of one attribute of one resource!
  - **Requires all system processing to be quiesced for the MODBLKS library switch**
    - Impacts service availability

Why Dynamic Resource Definition?

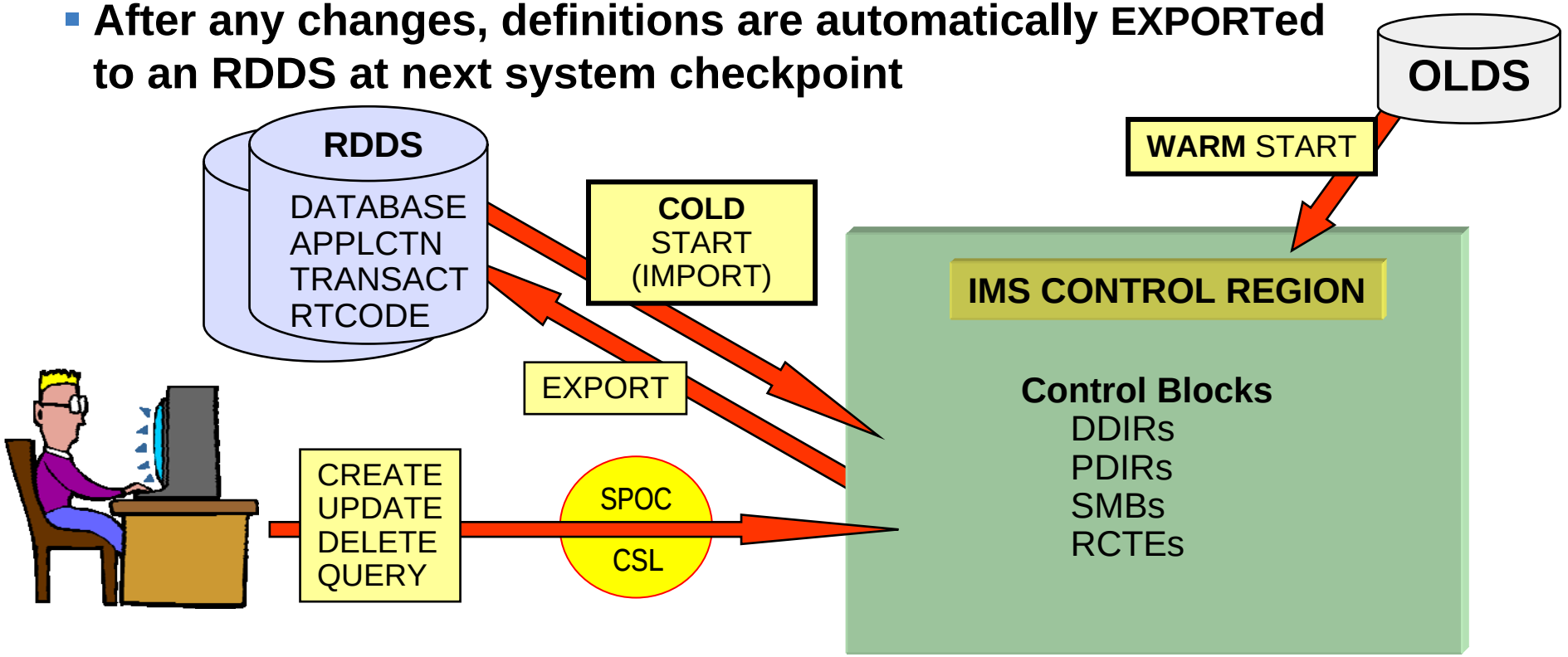


- **When DRD is enabled, resources need only ever be created once**
  - Kept in a **Resource Definition Dataset (RDDS)**
- **Resources are NOT defined in IMS System Definition**
  - Stage 1 input – especially with ETO – will be very small
  - IMS System Definition process will rarely be required …
  - … and will be much quicker
- **Resources are updated at a SPOC with UPDATE commands, added with CREATE commands, and deleted with DELETE commands**
  - No impact on availability of unchanged resources
  - All resources written to oldest RDDS at next system checkpoint
- **Resource definitions are portable between RDDSs**
  - Using EXPORT and IMPORT commands

New in IMS 10

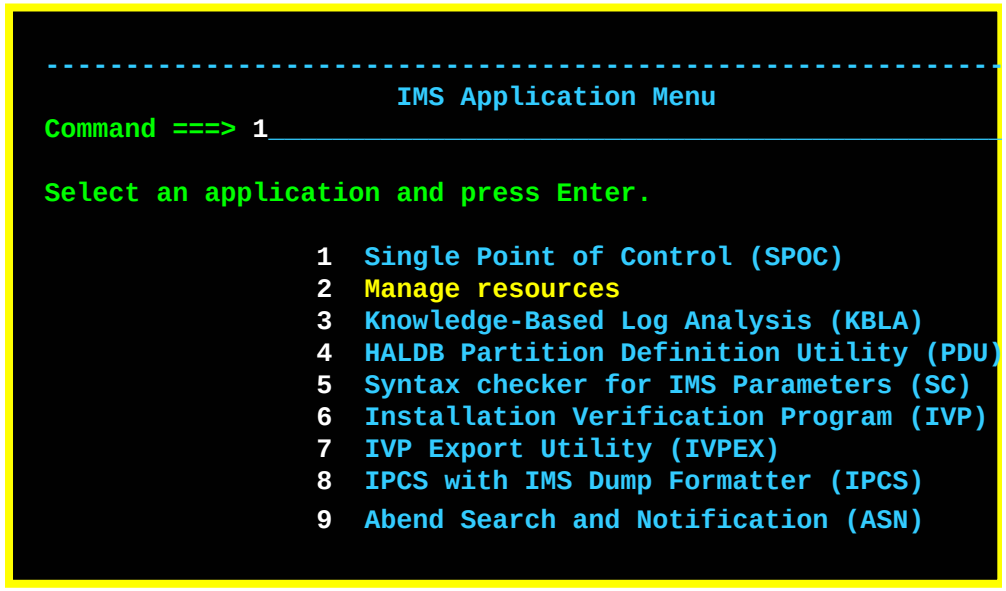
DRD Overview

- **During IMS Cold Start processing, resource definitions are IMPORTed from last used *Resource Definition Data Set (RDDS)***
- **Type-2 commands used to dynamically CREATE, UPDATE, or DELETE MODBLKS resources**
- **After any changes, definitions are automatically EXPORTed to an RDDS at next system checkpoint**



Entry Point for DRD Commands

- **Commands to CREATE, UPDATE, DELETE or QUERY resources and descriptors (resource templates) are entered through OM interface**
  - TSO SPOC, BATCH SPOC or other Operations Manager interface
- **Manage Resources User Interface**
  - Subfunction of the TSO SPOC
  - Removes the user's need to -
    - format CREATE, DELETE, UPDATE, and QUERY commands, or …
    - know names and valid values for attributes
- **Provides two views**
  - **List View** for less skilled operators
    - Requires more screens
  - **Command Syntax View** for more skilled operators
    - Generally requires a single screen



DRD GUI Interface – Manage Resources

- **Example using CREATE TRAN**

"LIST" View – requires more screens in most cases

```
File  Action  Manage resources  SPOC  View  Options  Help
                IMS Create Transactions
 Command ===>
         Plex . .         Route . .            Wait . .
 Press Enter to continue                       More:    +
 * NAME   Transaction name . . TESTRAN
 SET
   AOCMD    AOI command option . . . . . . . N          CMD,N,Tran,Y
   CLASS    Class. . . . . . . . . . . . . . 1          1-999
   CMTMODE  Commit mode. . . . . . . . . . . SNGL       Sngl, Mult
   CONV     Conversational . . . . . . . . . N          Y, N
   DCLWA    Log write-ahead option . . . . . Y          Y, N
   DIRROUTE MSC direct routing option. . . . N          Y, N
   EDITRTN  Input edit routine . . . . . .
   EDITUC   Edit to uppercase. . . . . . . Y          Y, N
   EMHBSZ   EMH buffer size. . . . . . . . _          12-30720
```

DRD Interface – Manage Resources …

"COMMAND SYNTAX View" - one screen

```
 File  Action  Manage resources  SPOC  View  Options
                IMS Create Transactions                          Top of data
Command ===> ____________________________________________________________
                Plex . . _______Route . . _______     Wait . . _______
Press Enter to continue

CREATE TRAN NAME( TESTRAN                                          )
  SET( AOCMD( N    ) CLASS( 1   ) CMTMODE( SNGL ) CONV( N ) DCLWA( Y )
  DIRROUTE( N ) EDITRTN(________ ) EDITUC( Y ) EMHBSZ(_______)
  FP( N ) INQ( N ) LCT( 65535 ) LPRI( 1  ) MAXRGN( 0   ) MSGTYPE( MULTSEG )
  MSNAME(_________) NPRI( 1  ) PARLIM( 65535 ) PGM(_________)
  PLCT( 65535 ) PLCTTIME( 6553500 ) RECOVER( Y ) REMOTE( N ) RESP( N )
  SEGNO( 0    ) SEGSZ( 0   ) SERIAL( N ) SIDL( 0    ) SIDR( 0    )
  SPASZ(_______) SPATRUNC(___) TRANSTAT( N ) WFI( N ))



 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve
```

Online Change Options

- **In IMS 10, for online changing of MODBLKS resources, you *either* use DRD *or* MODBLKS Online Change**
  - Choice determined at cold start
- **But in IMS 10, Online Change is still necessary for changing ACBs or MFS formats online**
- **There are two flavours of Online Change** (set at cold start)
  - **Local Online Change**
    - No requirement for CSL
    - Library status kept in MODSTAT dataset (one per IMS)
  - **Global Online Change**
    - **Requires CSL with a SPOC**
    - Library status for IMSplex kept in OLCSTAT dataset
    - Coordinated across all IMSs in IMSplex

Works with a single IMS or a multi-IMS IMSplex

- **Global Online Change offers two options for changing ACBs**
  - **TYPE(ACBLIB)** - full library switch technique (IMS 8/9/10)
  - **TYPE(ACBMBR)** - **ACB Member Online Change** (IMS 10)

ACB Member Online Change

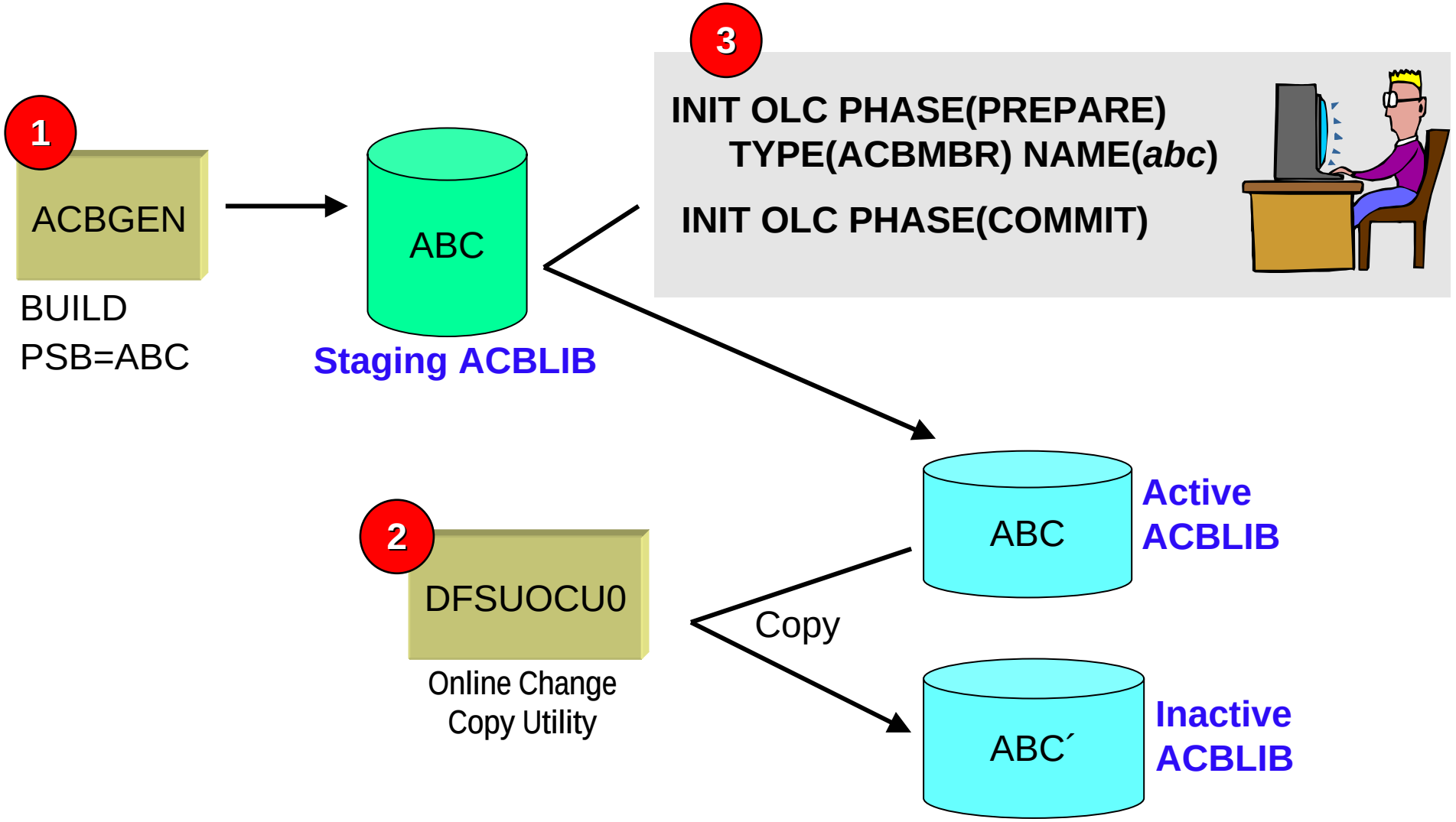
- **Complements DRD by providing a non-disruptive online change facility for ACBs**
- **Capability to add/change specified ACBs by only quiescing resources that are affected by the online change**
- **Uses INIT commands, entered at a SPOC**
  - **INIT OLC PHASE(PREPARE) TYPE(ACBMBR) NAME(*list*)**
    - From the names specified, IMS builds the complete set of indexes, logically related DBs, and PSBs related to changed DBDs

- **ACBGEN is done into the staging ACBLIB (as usual)**

  But …

- **Member-OLC copies modified ACBs into the active ACBLIB**

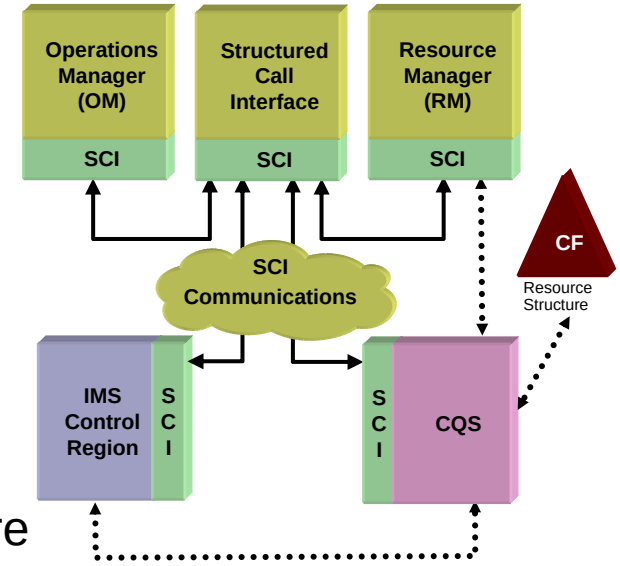
Process for ACBLIB Member OLC



Sysplex Terminal Management

Sysplex Terminal Management (STM)

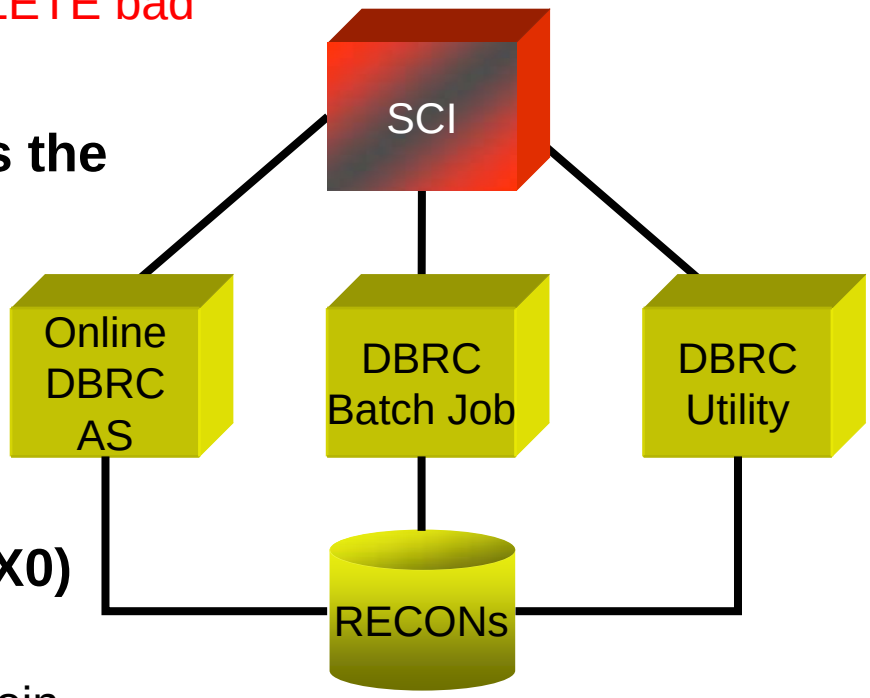
- **Creates a single system image for SNA terminal users in a Shared Queues environment**
- **Enforce global resource type consistency**
  - Prevent naming inconsistencies between IMSs
- **Enforce global resource name uniqueness**
  - Prevent multiple logon / signon within the IMSplex
- **Enable Terminal and USER resource status recovery across IMSplex**
  - Resume significant status on another IMS after failure
    - Command status (stopped, being traced, etc)
    - User status (Conversation status, STSN sequence numbers)
- **Exploits CSL Resource Manager with a Resource Structure**
  - Structure used to hold Resource Names (LTERMs, Trancodes, USERIDs, etc) and Resource Status (of Terminals and ETO USERs)



Other CSL Facilities

Automatic RECON Loss Notification

- **If a RECON "goes bad", RECON reconfiguration is performed on that system**
  - Operators can not DELETE/DEFINE bad RECON until all active IMS systems have accessed RECONs and performed reconfiguration themselves
    - Only then will bad RECON be deallocated by z/OS
  - DBRC with the problem immediately issues a list of all active DBRCs
  - Problem is knowing when it is OK to DELETE bad RECON and DEFINE a new SPARE
- **With CSL, the DBRC that experiences the problem, will notify all other DBRCs**
  - uses Structured Call Interface (SCI)
  - all other systems immediately perform RECON reconfiguration
- **Implementation is done by coding a DBRC SCI Registration Exit (DSPSCIX0)**
  - Exit is passed name of a RECON
  - Exit returns IMSplex name for DBRC to join



Parallel RECON Access (PRA)

New in IMS 10

- **Customers (with or without data sharing) sometimes experience RECON contention problems**
  - typically when running multiple batch/utilities concurrently with online IMS or when restarting multiple online systems
- **IMS 10 Solution (Optional)**
  - Exploit **Transactional VSAM (TVS)*** to provide data sharing of the RECON data set
    - TVS: System facility that provides locking, logging, caching, and commit for concurrent updates to VSAM data sets (RECONs)
- **DBRC requests from multiple systems (**one request per system – online, batch, or utility**) are processed in parallel**
- **Automatic RECON Loss Notification is clearly essential!**
  - Hence CSL (specifically SCI) is a prerequisite

* TVS is a chargeable feature of DFSMS – but with a specially reduced price when used just for RECON sharing

Transaction Level Statistics

- **IMS TM logs transaction statistics (type '07' log record) for the whole program schedule**
  - Enhanced in IMS 10 – to contain I/O statistics, previously only available with IMS Monitor
- **Optionally in IMS 10 these statistics can additionally be logged at the transaction level for easier performance analysis or chargeback purposes**
  - System Default specified in DFSDFxxx PROCLIB member
  - TRANSACT macro can specify (APPLCTN for Non-message driven BMP)
  - Dynamically activated/deactivated by UPDATE type-2 command
    - **UPDATE TRAN NAME(xyz) SET(TRANSTAT(Y))**
      - Requires CSL and SPOC
- **IMS Performance Analyzer (IBM Tool) exploits these new log records**

Online Resource Global Status

New in IMS 10

- **This IMS 10 enhancement is for the multi-IMS IMSplex customer**
- **As an option, IMS can maintain the operational status within the online systems of DBs, Partitions, DEDB AREAs and Transactions**
  - Kept in the Resource Structure in the Coupling Facility
  - Can change (UPDATE IMS …) which resource-types are tracked
- **Global status is used at online-system start-up**
  - If **Cold Start**, global status is applied to relevant DBs and transactions
  - If **Warm Start**, global status is applied if it was changed while this IMS was down
- **Global Status can only be set by a *Global Command*, e.g. -**
  - Type 1 database commands with GLOBAL parameter
    - **`/DBR DB CUSTDB01 GLOBAL`**
  - Type 2 UPDATE with SCOPE(ALL) (the default)
    - **`UPD DB NAME(DEDBMST) STOP(ACCESS) SCOPE(ALL)`**
    - **`UPD TRAN CUSTTR02 START(Q,SCHD) SCOPE(ALL)`**

Protection of DBs from misuse by batch or utilities should use DBRC PFA and READONLY flags

MSC Bandwidth Statistics

- **IMS 10 introduces several enhancements for MSC**
  - Use of **VTAM Generic Resources** for a group of IMS systems in an IMSplex
  - **UPDATE** of all attributes of physical and logical links and MSNAMEs
  - **Bandwidth Mode** – a higher performance option, set at the logical link level
    - Bandwidth Mode changes MSC message protocol, but without loss of integrity
    - Multiple messages, if available, can be placed in a SEND buffer, and sent with a single Log Write and a single SEND
- **Bandwidth Mode is enabled/disabled by command** (type 1 or 2)

  /UPD MSLINK NAME (name) SET((BANDWIDTH(ON | OFF) BUFSIZE(xxxxx))

  UPDATE MSLINK NAME (name) SET((BANDWIDTH(ON | OFF) BUFSIZE(xxxxx))
- **IMS maintains statistics of MSC performance**
  - Reset by

    UPD MSLINK NAME(name) START(STATISTICS) OPTION(RESET)
  - Displayed by

    QUERY MSLINK NAME(name) SHOW(STATISTICS)
    - ▶ Allows easy monitoring of performance with different buffer sizes

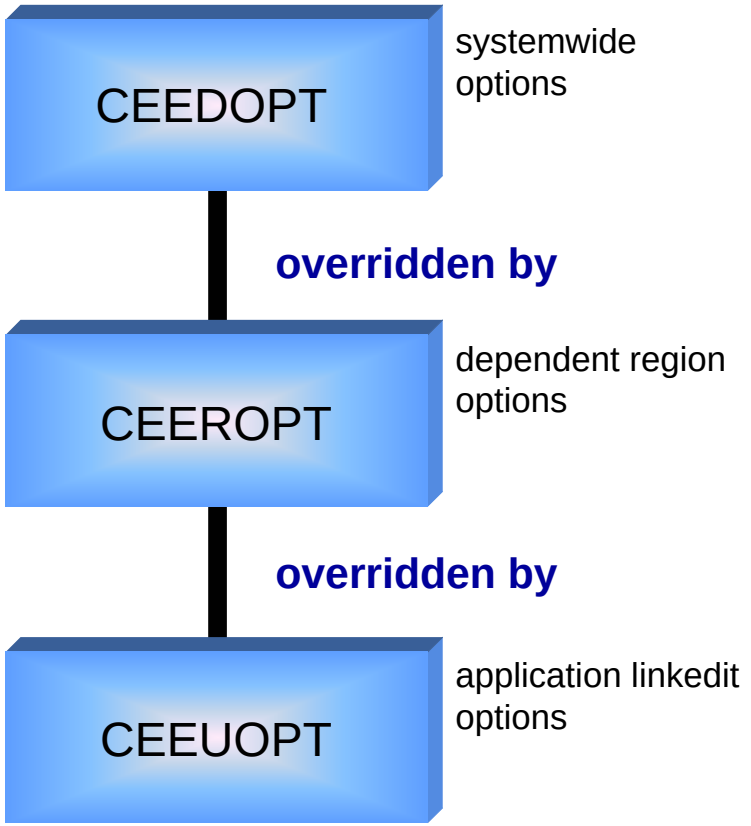
Requires the CSL

SERIAL Program Management with SQ

- **IMS 10 provides support for SCHDTYPE=SERIAL programs across an IMSplex with Shared Queues**
- **The CSL Resource Manager uses the Resource Structure to track usage of Serial Programs and ensures only one schedule at a time within the IMSplex**
  - Previously it required a customer solution to guarantee that SCHDTYPE=SERIAL programs processed messages serially within an IMSplex
- **This function is automatically enabled when CSL Resource Manager and Resource Structure exist**
- **Support for Serial Transactions is unchanged**
  - Transaction gets processed serially in the local IMS which receives the message
  - Appropriate, for example, for automated operator transactions that must run on the IMS that creates them

LE Dynamic Runtime Options

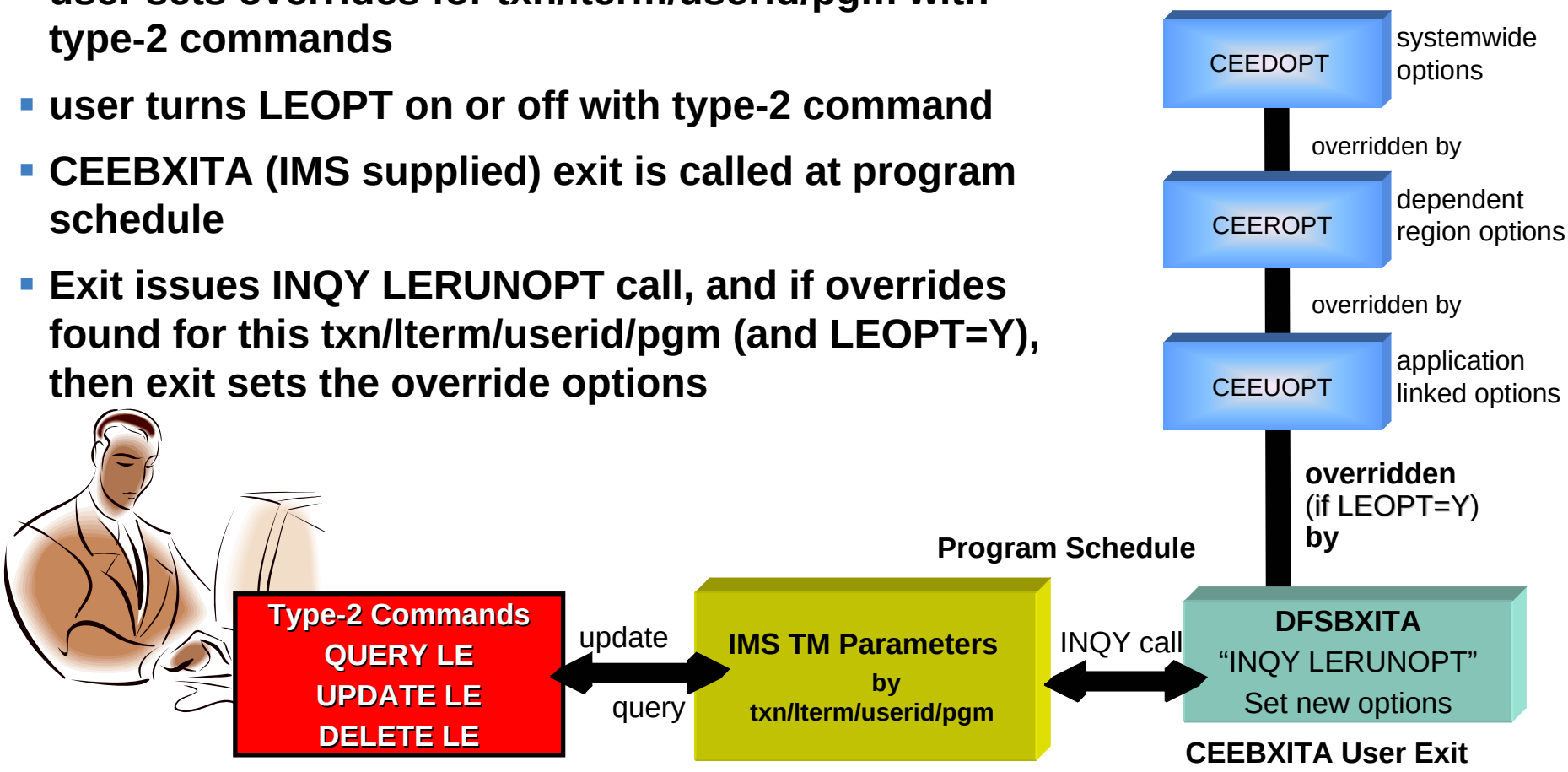
Without CSL…



- **Changing runtime options is sometimes needed**
  - eg. to get diagnostic information
- **Changing options is not trivial!**

LE Dynamic Runtime Options with CSL

- **The LE allows an exit (CEEBXIT) to be called at program start-up to set runtime options, and IMS provides such an exit - DFSBXITA**
- **user sets overrides for txn/lterm/userid/pgm with type-2 commands**
- **user turns LEOPT on or off with type-2 command**
- **CEEBXITA (IMS supplied) exit is called at program schedule**
- **Exit issues INQY LERUNOPT call, and if overrides found for this txn/lterm/userid/pgm (and LEOPT=Y), then exit sets the override options**



IMS Queue Control Facility V3

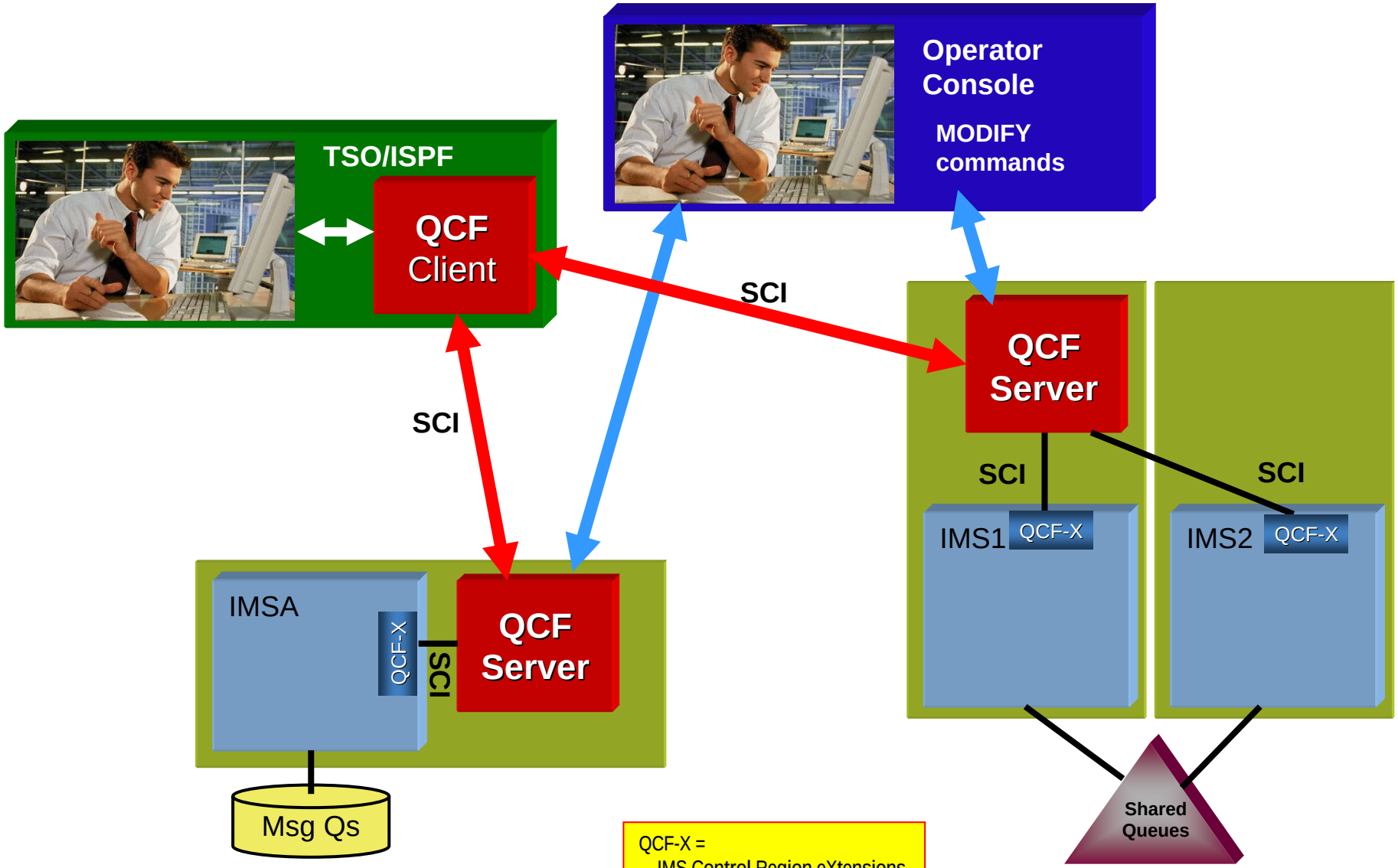
- **QCF V3 has been re-architected to exploit the Common Service Layer**
  - Structured Call Interface (SCI) used for all communications
    - QCF BMP has gone!
  - Console can be used to enter QCF commands
- **IMS Queue Control Facility consists of**
  - a TSO client address space
  - a server address space
  - a batch address space
  - an IMS Queue Control Facility extension
    - which runs in the IMS control region address space

All communicate via SCI

Note: QCF V3 does not require IMS itself to be using the CSL

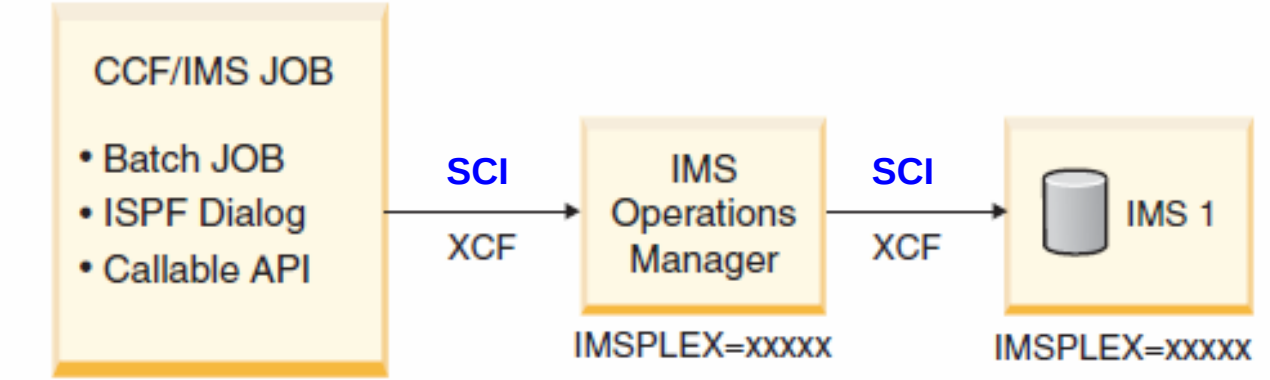
- No OM or RM is needed

QCF V3 Architecture



Command Control Facility (CCF) V2.1

- **CCF 2.1 supports multiple techniques for sending commands to "remote" IMS systems**
  - (1) APPC/IMS, (2) APPC/MVS to a command-issuing BMP, or (3) **SCI to an OM**



- **CCF is a SPOC**
  - Supports type-1 and type-2 commands
  - No requirement for APPC
    - No command restrictions (can issue /EXIT, /LOCK and /UNLOCK)
  - Using ISPF, CCF provides an "advanced function" TSO SPOC

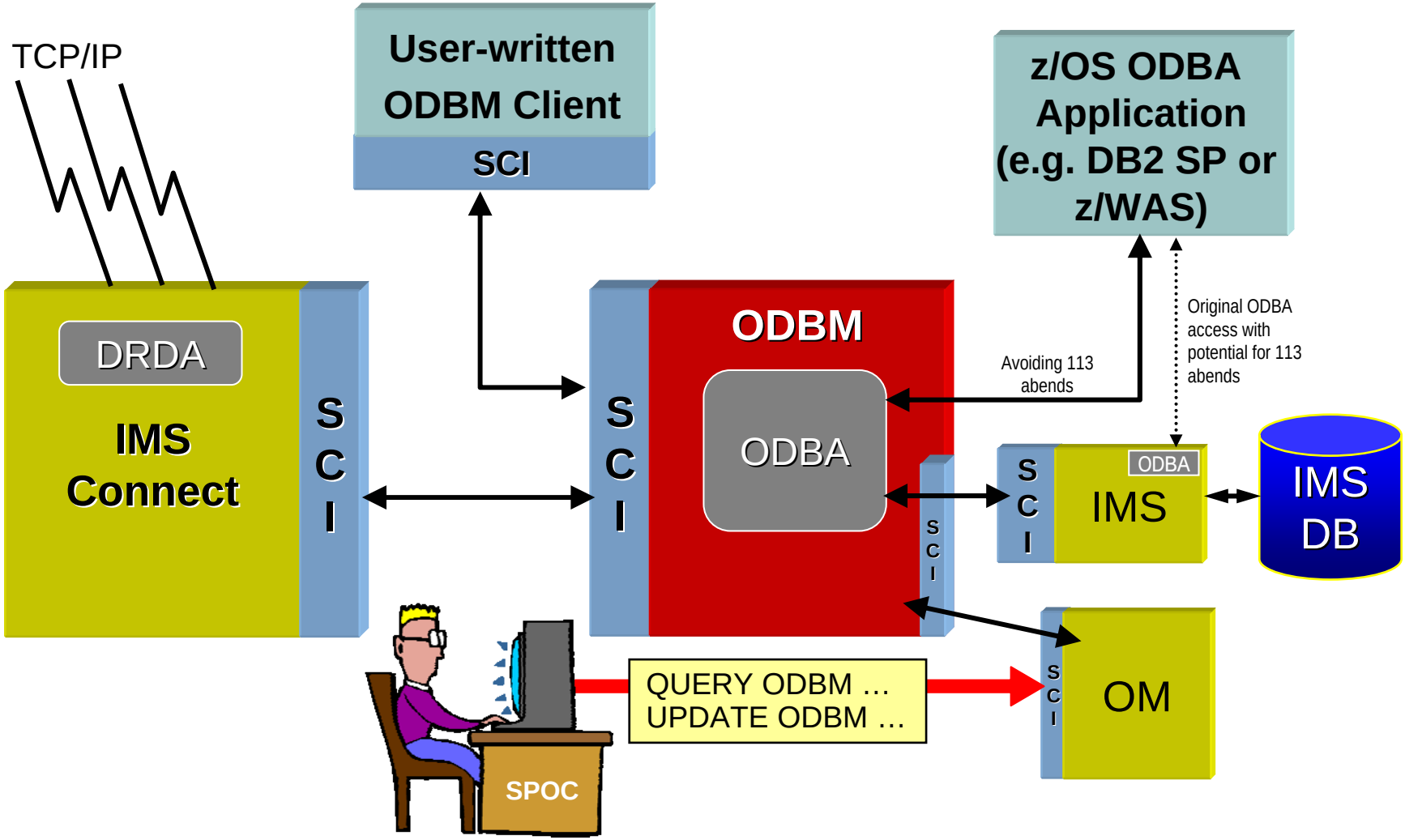
CSL with IMS 11

IMS 11 Adds Even More CSL Function

- **DB Quiesce**
  - Enhanced UPDATE command, with RM coordination across IMSplex
- **DB Level Trace**
  - Controlled by UPDATE command
- **64-bit FP Buffer Pool and ACB Pool support**
  - QUERY POOL TYPE(FPBP64) and TYPE(ACBIN64) commands
- **LTERM, NODE, USER and Userid supported by QUERY**
- **OTMA operation**
  - Monitoring (QUERY) of Commit Mode 1 queues
  - QUERY, UPDATE, CREATE, DELETE OTMA Routing Descriptors
- **Support for transaction timeout**
  - QUERY, CREATE, and UPDATE TRAN commands
- **User Exit Support (for exits in DFSDFxxx <SECTION=USER_EXITS>)**
  - QUERY and REFRESH

IMS 11 Open Database Manager

- **ODBM is a new Common Service Layer Address Space**



Summary

Summary

- **With IMS 10, the Common Service Layer has really "*come of age*"**
- **The CSL is "free" with IMS**
- **There is *so much you can do with it***
- **There is *so much you can't do without it***

- **The CSL should now be seen as an *integral part* of any IMS system**
  - Whether you use stand-alone IMS systems or shared DB or shared queues
  - For IMS TM or CICS DBCTL
  - The IMS Developers assume the CSL is in place!
    - Used widely in IMS 11