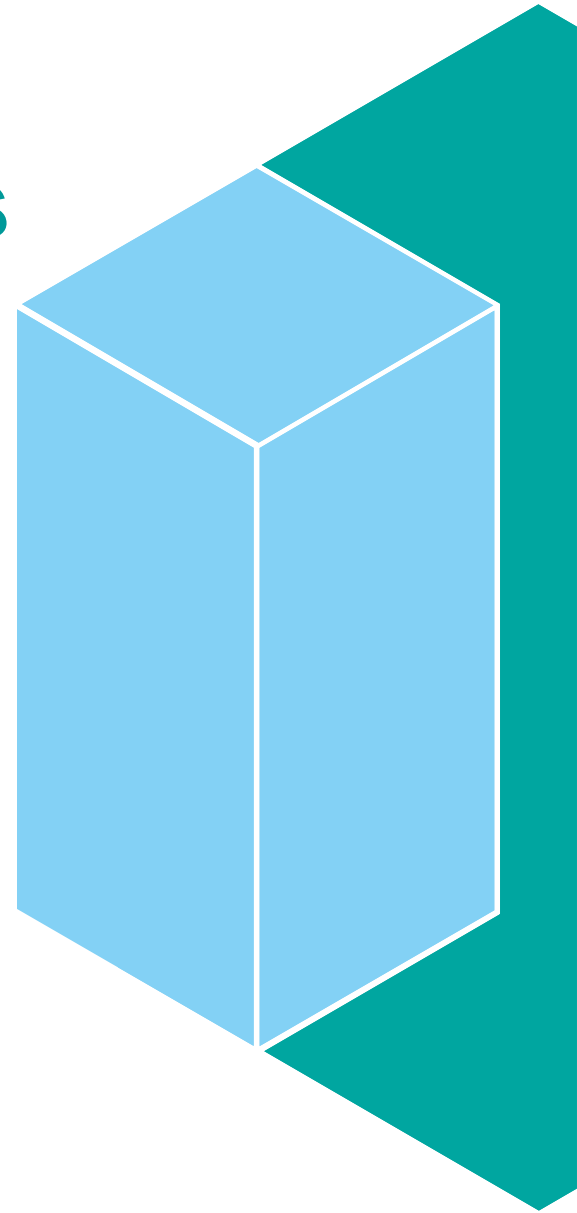


# Secrets to enabling IMS development environments for non-zSystem developers

**Ron Bisceglia**



Sharpen your competitive edge

**2016 IMS Technical Symposium**

March 7 – 10, 2016

Wiesbaden, Germany

[www.ims-symposium.com](http://www.ims-symposium.com)

## Topics

- **Why Rapid Application Deployment is Important**
- **IMS Application Development Tools**
- **Better Enablement of Application Development**
  - Easier, More Efficient Testing Capabilities
  - Enabling Developers to Provision Test Data

# Software Delivery Drives Competitive Advantage

*Yet few are able to deliver it effectively*

86%



of companies believe software delivery  
is important or critical

*But only...*

25%



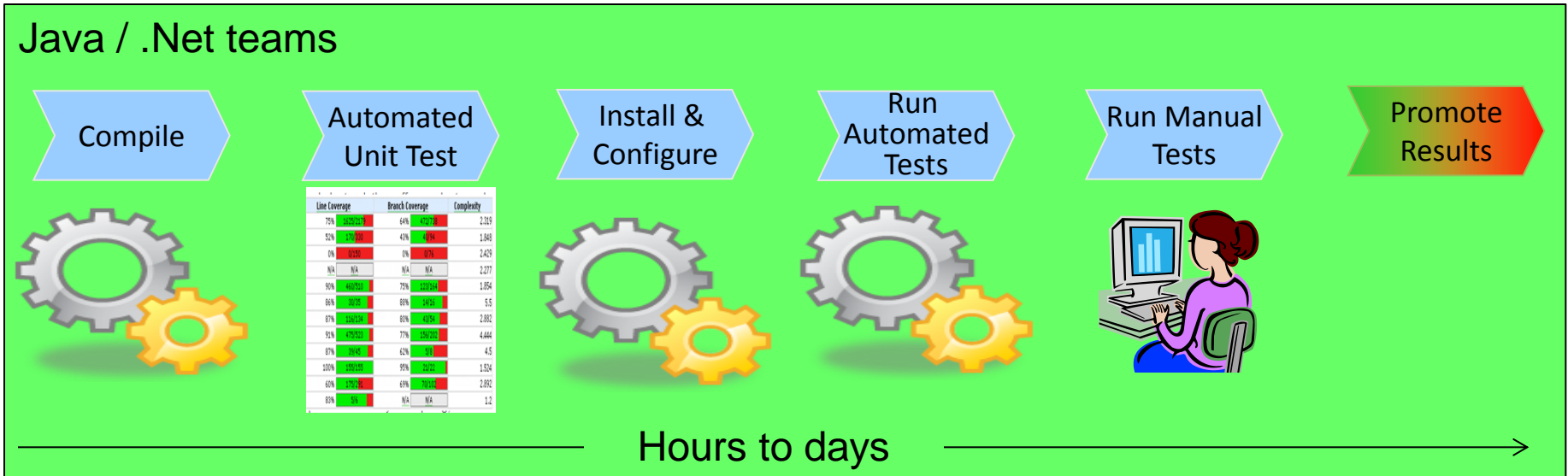
leverage software delivery effectively today



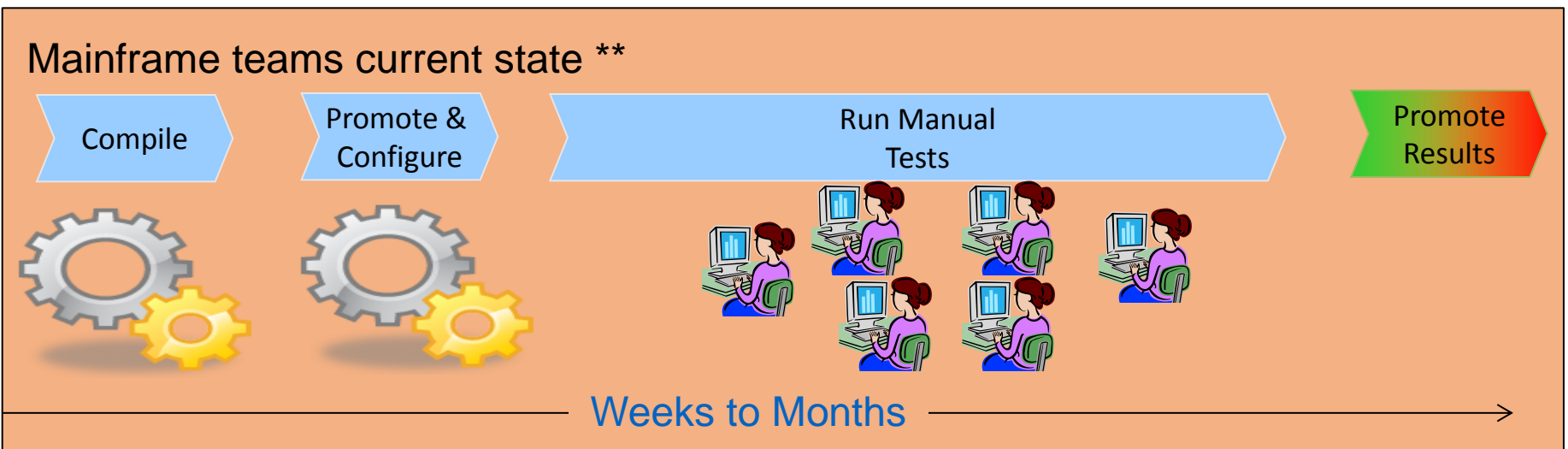
Source: "The Software Edge: How effective software development drives competitive advantage," IBM Institute of Business Value, March 2013

# Testing and Delivery – where are customers today?

## Java / .Net teams

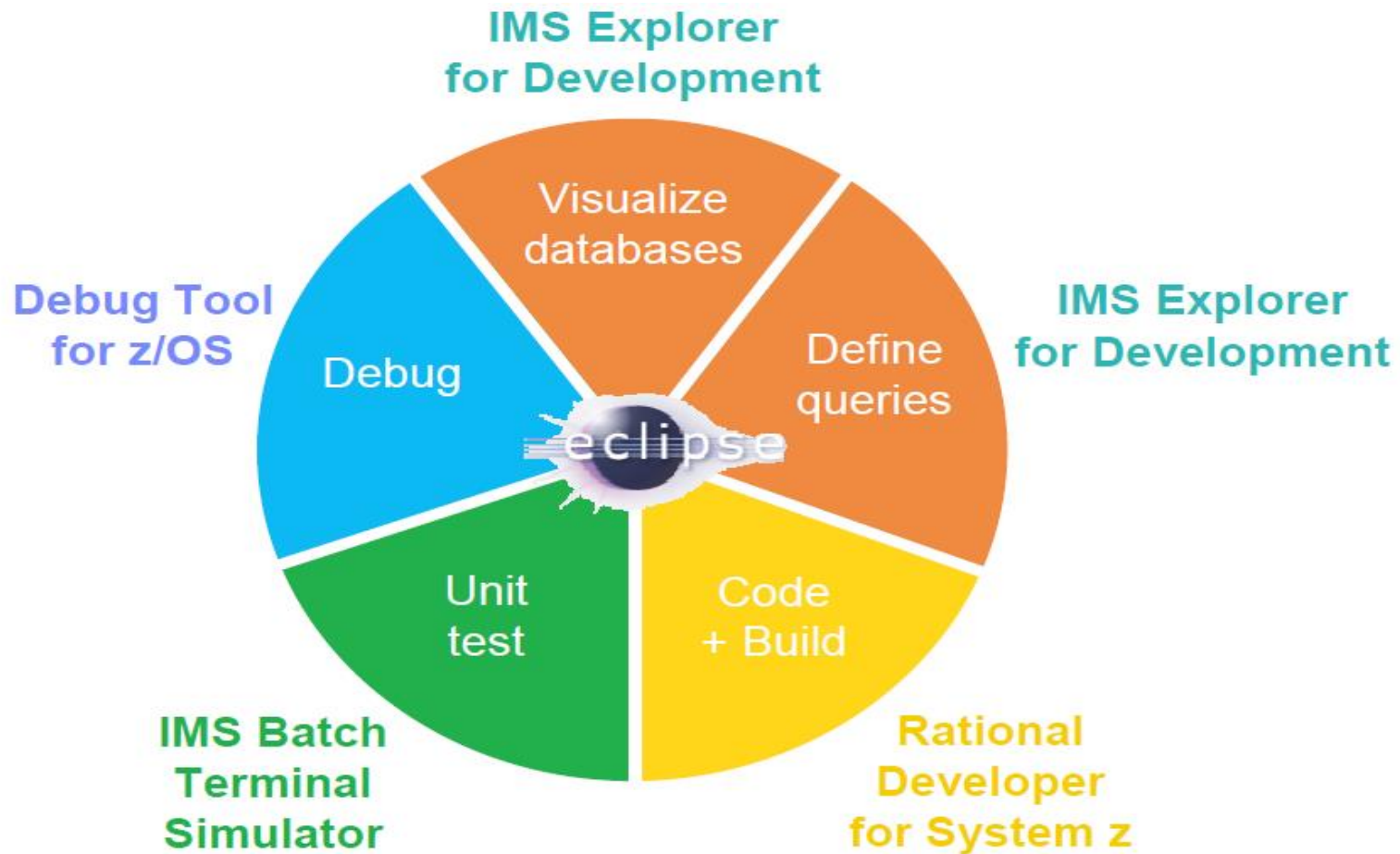


## Mainframe teams current state \*\*



\*\* Feedback from mainframe customers

# Eclipsed Based Development Tools



# IMS Explorer for Development – ‘E4D’

- **Visualize and change IMS schema (DBDs) and application views (PSBs)**
  - View IMS database hierarchical structures
  - View, create, and edit PSBs
  - Change/add fields in DBDs
  - Import COBOL copybooks and PL/I structures to a database segment
  - Generate DBD source and PSB source
- **IMS Catalog Navigation**
  - More ‘accepted’ structures
  - Open access to data

# IMS Explorer for Development

The screenshot displays the IMS Explorer for Development application interface. The main window shows a hierarchical database structure for the AUTODB database. The structure is as follows:

- DEALER** (Total length: 61)
  - DLRNO
  - DLRNAME
  - CITY
  - ZIP
  - PHONE
  - NEWFIELD
- MODEL** (Total length: 37)
  - MODKEY
- SALES** (Total length: 85)
  - SALENUM
- STOCK** (Total length: 46)
  - STKVIN
- STOCKSALE** (Has Logical Parent)
- EMPL** (Total length: 56)
  - EMPNO
- EMPLSAL** (Has Logical Parent, Total length: VLC)
  - DLRNO
- EMPLINFO** (Total length: 61)
  - STATE
- SALESPIR** (Has Logical Parent, Total length: 6)
  - EMPNO
- SALESBIF** (Total length: 15)

A red dashed arrow points from the **SALES** segment to the **EMPLSAL** segment, indicating a logical relationship between databases.

The Properties window at the bottom shows the following details for the selected segment:

Property	Value
Segment statement	
Length (BYTES):	61
Parent segment (PARENT):	0
Segment name (NAME):	DEALER
Source segment (SOURCE):	
List of fields	

Additional properties of a segment or field

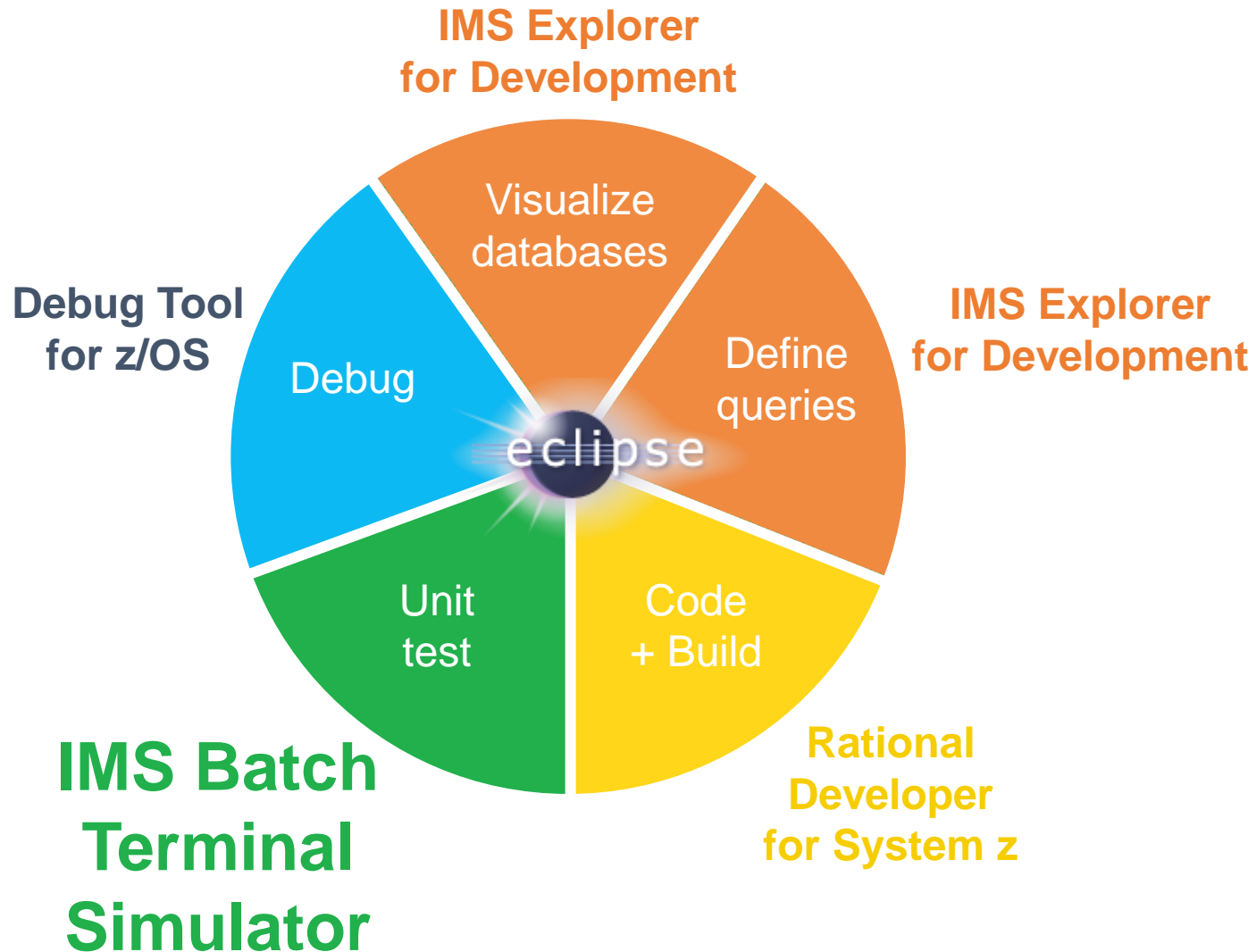


# IMS Explorer for Development

- **Access IMS data using SQL statements**
  - Leverage IMS Universal JDBC driver
- **Some zOS capabilities**
  - Browse data sets
  - Submit JCL and inspect the output in JES
  - Import and export DBD and PSB source files from a data set to the IMS Explorer, and vice-versa



# Eclipsed Based Development Tools



# IMS Development → Testing

- **Batch Terminal Simulator (BTS)**

- A powerful test facility with debugging features to ensure IMS, DB2, and WebSphere MQ applications operate properly.
- Simulates transaction processing in batch mode and generates listings containing screen images of transactions including data, user identification information, and timestamp through an audit report program
- Operates transparently to the applications, requiring no changes to IMS code, control blocks, libraries, or application load modules.
- Provides a comprehensive report showing all activities such as IMS DLI call trace, DB2 call trace, WebSphere MQ call trace, LU6.2/APPC, ETO Status code and more during program execution.

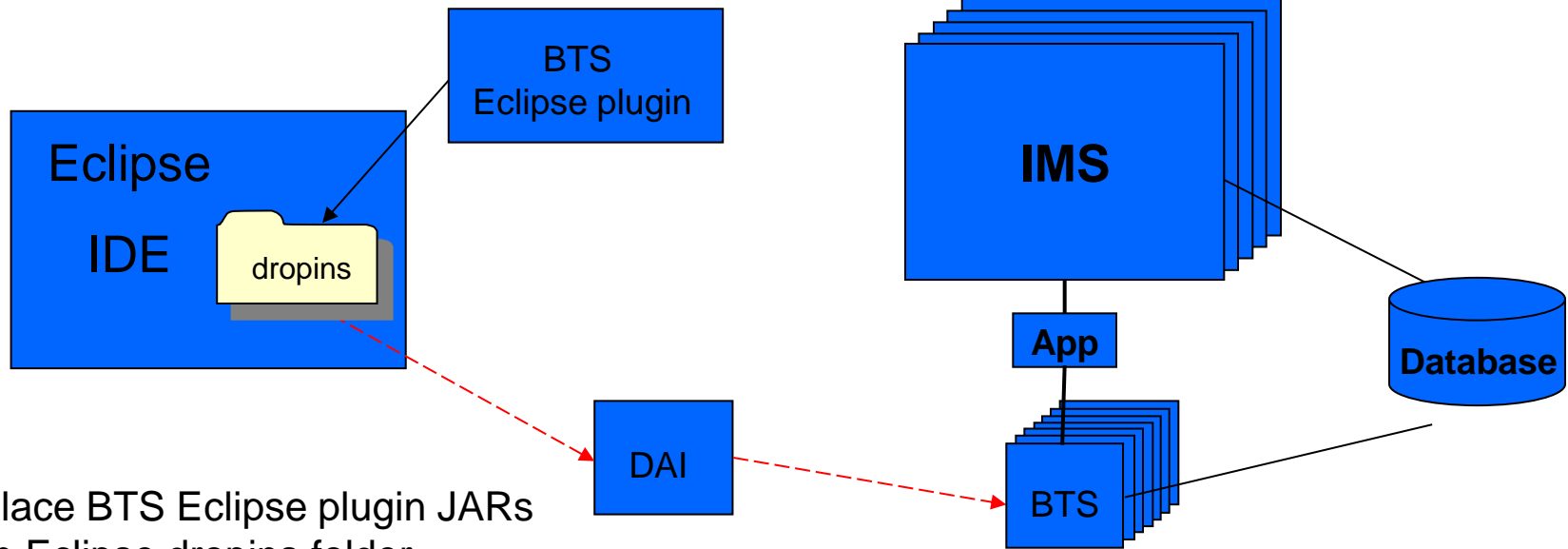
- **Does not require online IMS resources**

- **Cost Savings**
- **Reduce reliance on DBAs**

## BTS Eclipse Plugin

- **Allows customers to augment their Eclipse-based development environment to remotely drive IMS applications to run in a BTS environment**
- **Shipped as a group of JARs intended to be copied into the dropins directory under your Eclipse installation directory**
- **Communicates with BTS through the Distributed Access Infrastructure (DAI)**
- **Supports use of BTSRA for testing through exported XML files that contain BTS and launch configuration information**

# BTS Eclipse Plugin Environment



- Place BTS Eclipse plugin JARs in Eclipse dropins folder
- Utilizes IMS Tools Distributed Access Infrastructure (DAI) as a TCP endpoint
- Supports end-to-end testing driven by distributed client side app
- Supports low cost host simulation for client app development / test
- Brings IMS App Dev / Test to Desktop
  - RDz Integration
  - Debug Tool Integration

# Integrated Eclipse Environment for IMS Development, Testing, and Debugging

The screenshot displays the IBM Rational Developer for System z IDE interface, which is used for developing, testing, and debugging IMS applications. The interface is divided into several panes:

- Top Pane:** Contains the source code editor. The code is a COBOL program with syntax highlighting. A red circle highlights the **Debug** and **Test** buttons in the toolbar.
- Left Pane:** Contains the **z/OS Projects** view, showing a project named **DempApp1** with sub-projects like **PhoneBook-BMP** and **DDS1445**. A callout bubble points to this pane with the text "Remote compile, link".
- Bottom Left Pane:** Contains the **Properties** and **Outline** views. The **Outline** view shows a hierarchical structure of the program, including sections like **WORKING-STORAGE SECTION**, **LINKAGE SECTION**, and **DATA DIVISION**. A callout bubble points to this pane with the text "Program outline".
- Bottom Right Pane:** Contains the **Remote Error List** and **z/OS File System** views. The **Remote Error List** shows two messages: **IGYDS1168** and **IGYDS1082**, both indicating errors in the "PICTURE" string. A callout bubble points to this pane with the text "Errors and warnings".
- Right Pane:** Contains the **Remote Systems** view, showing a tree structure of remote systems and files. A callout bubble points to this pane with the text "Remote z/OS JES MVS files TSO Emulator".
- Bottom Center Pane:** Contains the **Console** view, which displays the output of the program. A callout bubble points to this pane with the text "Remote editing, Syntax highlighting / checking".

Callout bubbles provide additional context for the IDE features:

- Remote compile, link** (points to the z/OS Projects view)
- Program outline** (points to the Outline view)
- Errors and warnings** (points to the Remote Error List)
- Remote editing, Syntax highlighting / checking** (points to the Console view)
- Remote z/OS JES MVS files TSO Emulator** (points to the Remote Systems view)

## BTS Eclipse Plugin Features

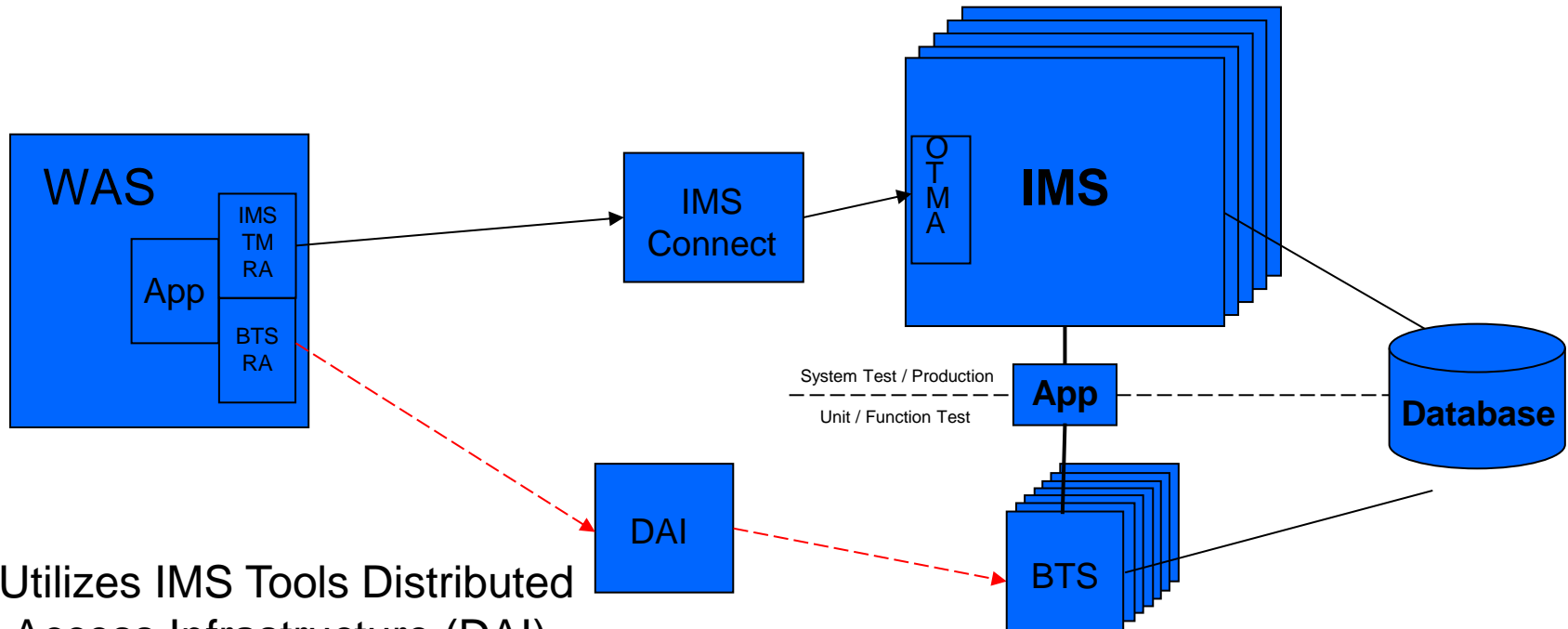
- **Provides a wizard to collect all input needed by BTS to simulate running of IMS applications**
  - IMS libraries
    - RESLIB, PROCLIB, STEPLIB, etc.
  - IMS runtime parameters
  - BTSIN
    - Transaction definitions
    - Optional input data
- **Can remotely connect to DAI in order to invoke BTS**
- **BTS definition can be exported in XML format**
  - To be distributed and imported by eclipse developers
  - To be used with BTSRA (to simulate TMRA-based applications)

## BTS Resource Adapter

- **Direct replacement for IMS TM Resource Adapter**
  - JCA-based resource adapter
- **Communicates with BTS through DAI**
  - Similar to TM RA communicating with IMS through IMS Connect and IMS OTMA
- **Supports subset of IMS TM RA functionality**
  - Basic send only and send receive functions
  - Does not support TM RA functions that require IMS Connect or IMS OTMA functionality
    - Asynchronous output not supported
    - ResumeTpipe and reroute not supported

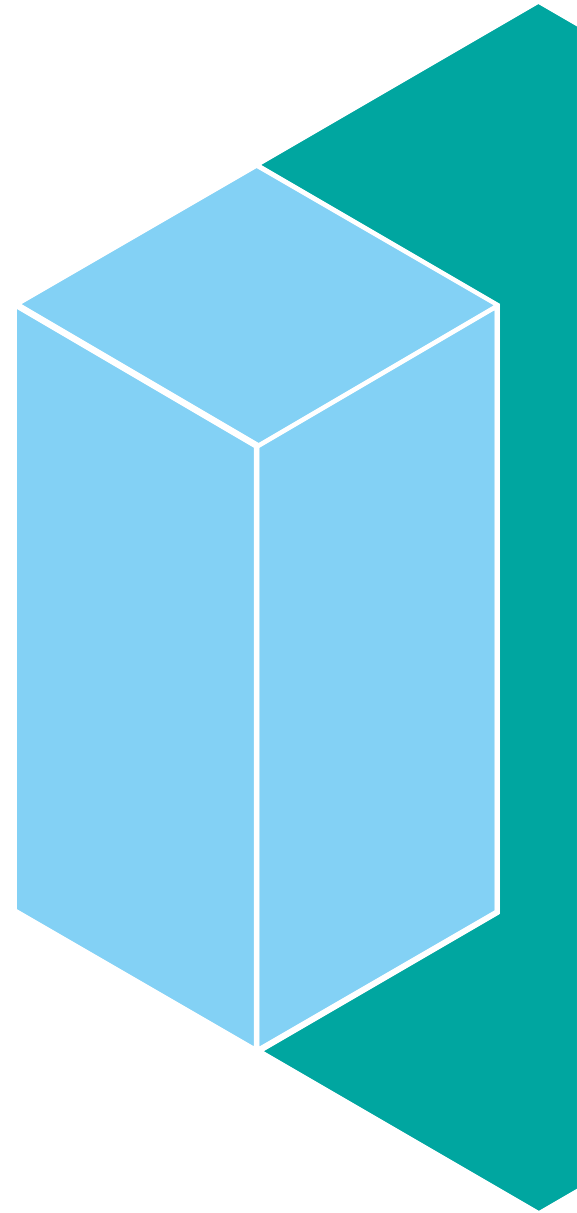


# BTS Resource Adapter Environment



- Utilizes IMS Tools Distributed Access Infrastructure (DAI) as a TCP endpoint
- Supports end-to-end testing driven by distributed client side app
- Supports low cost host simulation for client app development / test

# IBM Management Console



# DBD Analysis

Click “View DBD Map” to launch DBD Map Viewer.

The screenshot shows the IBM Management Console for IMS and DB2 for z/OS. The top navigation bar includes 'Resources with symptoms / Critical (1) / HDAMVSAM'. A red box highlights the 'View DBD Map' button in the 'Properties' section. The interface displays various metrics and charts for the HDAMVSAM resource.

**Properties:**

- Environment Name: Insight Demo
- Locale Alias: CAT13
- Database Name: HDAMVSAM
- Database Type: HDAM
- Access Method: VSAM

**Exceptions:** 6

- Actions (1)**
  - A reorganization is recommended
- Critical (3)**
  - [Excessive number of synonyms on RAPs](#)
  - [Excessive number of variable-length split segments](#)
  - [Excessive number of roots not in home blocks](#)
- Severe (0)**
- Warning (3)**
  - [Excessive volume of data in HDAM overflow area](#)
  - [Excessive free space fragmentation in one or more data sets](#)
  - [Excessive number of extensively scattered segments](#)

**Reports:** 31

- [2015-10-23 \(2\)](#)
- [2015-06-24 \(2\)](#)
- [2015-06-10 \(27\)](#)

**Space Use:** Number of Segments

Resource	Number of Segments
HDAMVSD1	~12,000,000
HDAMVSD2	~10,000,000

**Optimization:** Number of Database Records

Date	Number of Database Records
8/5/15	~500,000
8/20/15	~600,000
9/5/15	~700,000
9/20/15	~800,000
10/5/15	~1,200,000
10/21/15	~1,500,000

**Fragmentation:** Variable-Length Segment Splits

Resource	Variable-Length Segment Splits
HDAMVSD1	~40%
HDAMVSD2	~0%

# DBD Map Viewer

Decoding the DBD from DBDLIB. This view displays a graphical view of the segment hierarchy of the decoded DBD.

The color of a segment relates to the color used in the Data Sets view, and indicates which data set group the segment belongs to.

IBM Management Console for IMS and DB2 for z/OS

Resources

Hello, moris

Log Out

Resources

Autonomics

Reports

Set Up

Help

Search

Resources with Symptoms

Oldest synchronization: Symptoms for newly discovered resources are not yet synchronized.

Resources with symptoms

Critical (1)

HDSAMVSAM

Severe (0)

Warning (1)

Resources with symptoms / Critical (1) / HDSAMVSAM / DBD Map & Source

HDSAMVSAM

Map Source XML

DBD Map

HDSAMVSAM | HDSAM | VSAM  
IMSDEV.GULCAT13.DBDLIB1 | TSL102 | DATE 10/23/15 TIME 05.01

ROOTLV1  
KEY=ROOTKEY  
(fixed) SC=001

DEP1LV1  
KEY=DEP1KEY  
(variable) SC=002

DEP2LV1  
KEY=DEP2KEY  
(variable) SC=003

DEP3LV2  
KEY=DEP3KEY  
(variable) SC=004

DE43LV2  
KEY=DEP4KEY  
(variable) SC=005

Data Sets

Data set: Data Set Group 1

DD name: HDSAMVSD1

Access method: VSAM ESDS

Maximum data set size: 4 GB

Outline

Segment Properties - Physical Segment

Segment code:	001
Segment name:	ROOTLV1
Segment length defined in DBD:	200 bytes (fixed)
Segment format stored in database:	Fixed length
Data set group:	1
Field names:	ROOTKEY (16 bytes)

# DBD Source and XML

IBM Management Console for IMS and DB2 for z/OS

Resources

Hello, moris Log Out

Resources

Autonomics

Reports

Set Up

Help

Search

Resources with Symptoms

Oldest synchronization: Symptoms for newly discovered resources are not yet synchronized.

Resources with symptoms

- Critical (1)
- Severe (0)
- Warning (1)

HDAMVSAM

Map Source XML

DBD XML

```
<?xml version="1.0" encoding="UTF-8"?>
<ns2:dbd xmlns:ns2="http://www.ibm.com/ims/DBD" dbdName="H
<access dbType="HDAM">
  <hdam osAccess="VSAM" password="N">
    <rmName name="DFSHDC10">
      <subOptions anchorPoints="3" maxRBN="300000"/>
    </rmName>
    <dataSetContainer>
      <dataSet ddname="HDAMVSD1" label="DSG001" scan="3"
        <size size="3072"/>
      </dataSet>
      <dataSet ddname="HDAMVSD2" label="DSG002" scan="3"
        <size size="3072"/>
      </dataSet>
    </dataSetContainer>
  </hdam>
</access>
<segment1 imsName="ROOTLV1">
  <hdam label="DSG001">
    <bytes maxBytes="200"/>
  </hdam>
</segment1>
</dbd>
```

DBD Map

ROOTLV1  
KEY=ROOTKEY  
(fixed) SC=001

DEP1LV1  
KEY=DEP1KEY  
(variable) SC=002

DEP2LV1  
KEY=DEP2KEY  
(variable) SC=003

DEP3LV2  
KEY=DEP3KEY  
(variable) SC=004

DE43LV2  
KEY=DE4KEY  
(variable) SC=005

IBM Management Console for IMS and DB2 for z/OS

Resources

Hello, moris Log Out

Resources

Autonomics

Reports

Set Up

Help

Search

Resources with Symptoms

Oldest synchronization: Symptoms for newly discovered resources are not yet synchronized.

Resources with symptoms

- Critical (1)
- Severe (0)
- Warning (1)

HDAMVSAM

Map Source XML

DBD Source

```
000001 TITLE 'ASSEMBLY OF DBDNAME=HDAMVSAM'
000002 * DSNAME=IMSDEV.GUI.CAT13.DBDLIB1
000003 * VOL=TS1102
000004 * DBDGEN DATE 10/23/2015 TIME 05.01
000005 * DECODE DATE 10/26/2015 TIME 06.45.36
000006 * IMS VERSION 13.1
000007 * DBD NAME=HDAMVSAM,ACCESS=(HDAM,VSAM),
000008 * RMNAME=(DFSHDC10,3,300000),PASSWD=NO,
000009 * VERSION= DATE 10/23/15 TIME 05.
000010 *****
000011 * DATASET GROUP NUMBER 1
000012 *****
000013 DSG001 DATASET DD1=HDAMVSD1,SIZE=(3072),SCAN=3
000014 *****
000015 * SEGMENT NUMBER 1
000016 *****
000017 * SEGM NAME=ROOTLV1,PARENT=0,BYTES=200,RULES=(LLL,
000018 * PTR=(TWIN,,),
000019 * FIELD NAME=(ROOTKEY,SEQ,U),START=1,BYTES=16,TYPE=
000020 *****
000021 * SEGMENT NUMBER 2
000022 *****
000023 * SEGM NAME=DEP1LV1,PARENT=(ROOTLV1),,BYTES=(270
000024 * RULES=(LLL,LAST),PTR=(TWIN,,),
000025 * FIELD NAME=(DEP1KEY,SEQ,U),START=5,BYTES=2,TYPE=X
000026 *****
000027 * DATASET GROUP NUMBER 2
000028 *****
000029 DSG002 DATASET DD1=HDAMVSD2,SIZE=(3072),SCAN=3
```

DBD Map

ROOTLV1  
KEY=ROOTKEY  
(fixed) SC=001

DEP1LV1  
KEY=DEP1KEY  
(variable) SC=002

DEP2LV1  
KEY=DEP2KEY  
(variable) SC=003

DEP3LV2  
KEY=DEP3KEY  
(variable) SC=004

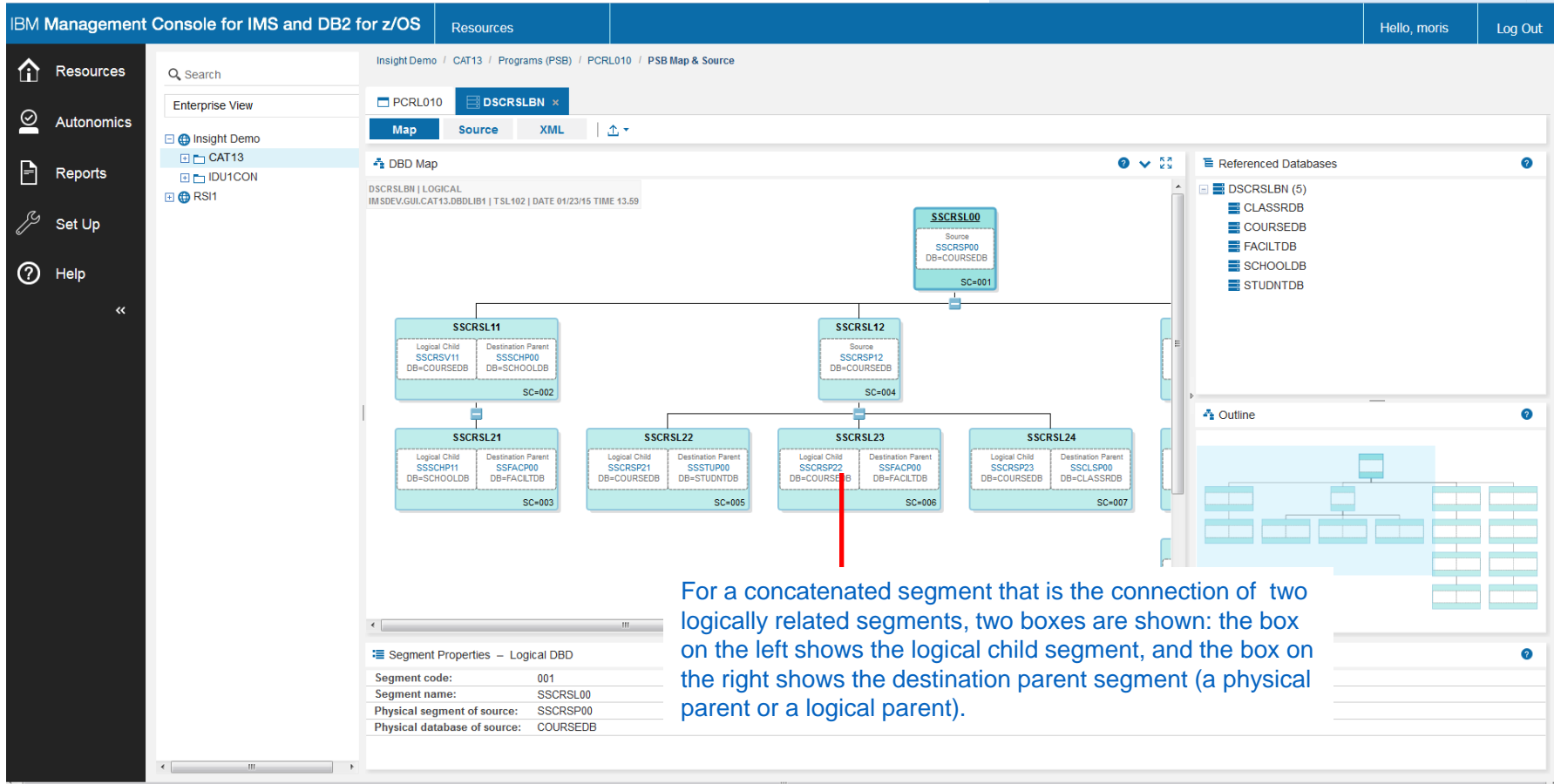
DE43LV2  
KEY=DE4KEY  
(variable) SC=005

Outline

ionLocation="LAST" ins  
"/>  
ROOTKEY" name="ROOTKEY  
"CHAR"/>

# Logical DBD Map Viewer

This is a logical DBD. This view displays the hierarchy of the logical segments. Each segment box shows the source database and source segment information.



For a concatenated segment that is the connection of two logically related segments, two boxes are shown: the box on the left shows the logical child segment, and the box on the right shows the destination parent segment (a physical parent or a logical parent).

# PSB Dashboard

PSB Dash board display the outlook of the PSB and the list of PCBs.  
Push “View PSB Map” to Launch PSB Map Viewer.

The screenshot displays the PSB Dashboard interface. On the left is a dark sidebar with navigation links: Resources, Autonomics, Reports, Set Up, and Help. The main content area has a top navigation bar with 'Hello, moris' and 'Log Out'. Below this, a breadcrumb trail reads: Resources with Symptoms / Critical (1) / HDAMVSAM / Cross Reference (PSB) / PALL010. A search bar is present. The 'Resources with Symptoms' section shows a list of symptoms: Critical (1), Severe (0), and Warning (1). The 'Properties' section for PALL010 lists: Locale Alias: CAT13, Resource: PALL010, Total PCBs: 32, Number of DB PCBs: 30, Number of TP PCBs: 1, Number of GSAM PCBs: 1, Compiler Language: ASSEM/COBOL, PSBGEN Date: 2015/01/23 13:59:00, and PSBGEN IMS Version: 13. The 'View PSB Map' button is circled in red. The 'PCB List' table on the right contains the following data:

Type	PCB Name	Resource Name
DB		DBSHISAM
DB		DEDBFPSI
DB		DEDBSDEP
DB		DEDB0001
DB		DRFDB1
DB		DSCRSLBN
DB		DSFACLBN
DB		DSSCHLBN
DB		DSSTULBN
DB		FACILTDB
DB		HDAMDB2
DB		HDAMVSAM
DB		HDMDB1
DB		HISAMDB1



# PSB Map Viewer

Decoding a PSB from the PSBLIB. This view displays the sensitive segment hierarchy for the (PCB).

IBM Management Console for IMS and DB2 for z/OS

Resources

Hello, moris Log Out

Insight Demo / CAT13 / Programs (PSB) / PCRL010 / PSB Map & Source

PCRL010

Properties

PSB name: PCRL010

Data set name: IMSDEV.GUL.CAT13.PSBLIB2

Volume serial: R1L10D

PSBGEN date: DATE 01/23/15 TIME 13:59

Compiler language: ASSEM

Number of PCBs: 4 (TP: 0, DB: 4, GSAM: 0)

PCB List

Type	PCB No.	PCB Name	DBD Name	PROCOPT
DB	1	DB PCB #1	DSCRSLBN	G
DB	2	DB PCB #2	DSFACLBN	G
DB	3	DB PCB #3	DSSCHLBN	G
DB	4	DB PCB #4	DSSTULBN	G

PCB Map

DB PCB #1 | DB  
IMSDEV.GUL.CAT13.PSBLIB2 | R1L10D | DATE 01/23/15 TIME 13:59

SSCRSL00  
PROCOPT=G  
SC=001

SSCRSL11  
PROCOPT=G  
SC=002

SSCRSL12  
PROCOPT=G  
SC=004

SSCRSL13  
PROCOPT=G  
SC=008

SSCRSL14  
PROCOPT=G  
SC=012

SSCRSL21  
PROCOPT=G  
SC=003

SSCRSL22  
PROCOPT=G  
SC=005

SSCRSL23  
PROCOPT=G  
SC=006

SSCRSL24  
PROCOPT=G  
SC=007

SSCRSL25  
PROCOPT=G  
SC=009

SSCRSL26  
PROCOPT=G  
SC=013

SSCRSL31  
PROCOPT=G  
SC=010

SSCRSL32  
PROCOPT=G  
SC=014

SSCRSL41  
PROCOPT=G  
SC=011

SSCRSL42  
PROCOPT=G  
SC=015

PCB Properties

PCB name: DB PCB #1

PCB type: DB

DBD name:

Processing options:

Sequential buffering:

Concatenated key length:

COPIES:

POS:

Outline

The PCB Map is changed when you select the different PCB in the PCB list widget.

# Export

PCB Map, PSB Macro Source, and XML document can be exported to a local file.

The screenshot displays the IBM Management Console for IMS and DB2 for z/OS. The left sidebar contains navigation links for Resources, Autonomics, Reports, Set Up, and Help. The main content area is titled "Insight Demo / CAT13 / Programs (PSB) / PCRL010 / PSB Map & Source".

On the left, the "PCRL010" properties are listed:

- PSB name: PCRL010
- Data set name: IMSDEV.GUI.CAT13.PSBLIB2
- Volume serial: R1L10D
- PSBGEN date: DATE 01/23/15 TIME 13.59
- Compiler language: ASSEM
- Number of PCBs: 4 (TP: 0, DB: 4, GSAM: 0)

In the center, the "PCB List" table shows four entries:

Type	PCB No.	PCB Name	DBD Name	PROCOPT
DB	1	DB PCB #1	DSCRSLEBN	G
DB	2	DB PCB #2	DSFACLEBN	G
DB	3	DB PCB #3	DSSCHLEBN	G
DB	4	DB PCB #4	DSSTULEBN	G

Below the table, the "PCB Map" tab is selected. A red box highlights the "Export" button, which has a dropdown menu with the following options:

- Export PCB Map...
- Export PSB Source...
- Export PSB XML...

The main area displays a hierarchical PCB Map for "DB PCB #1". The root node is "SSCRSL00" (PROCOPT=G, SC=001). It branches into four nodes: "SSCRSL11" (SC=002), "SSCRSL12" (SC=004), "SSCRSL13" (SC=008), and "SSCRSL14" (SC=012). Each of these further branches into two more nodes, resulting in a total of 16 leaf nodes (SSCRSL21 through SSCRSL42). The nodes are represented by pink boxes with their names and SC values.

On the right, the "PCB Properties" panel shows details for "DB PCB #1", including its type (DB), DBD name, processing options, sequential buffering, concatenated key length, COPIES, and POS.

At the bottom, an "Outline" panel shows a simplified version of the hierarchical PCB Map structure.

# Cross Reference from DBD to PSBs

From the DBD dash board, you can get the PSB list and logical DBD list that refer this DBD. Select “PSB” or “Logical DBD” from the pull down menu of “Cross Reference”

The screenshot displays the IBM Management Console for IMS and DB2 for z/OS. The interface includes a top navigation bar with 'Resources', 'Hello, moris', and 'Log Out'. A left sidebar contains icons for 'Resources', 'Autonomics', 'Reports', 'Set Up', and 'Help'. The main content area shows the 'Resources with symptoms' section for 'Critical (1) / HDAMVSAM'. A red circle highlights the 'Cross Reference' dropdown menu, which is open, showing 'PSB' and 'Logical DBD' options. Below this, the 'Properties' section lists details for 'Insight Demo', including 'Locale Alias: CAT13', 'Database Name: HDAMVSAM', 'Database Type: HDAM', and 'Access Method: VSAM'. To the right, there are sections for 'Exceptions' (6), 'Reports' (31), and 'Actions' (1). The bottom of the screen features three charts: 'Space Use' (Number of Segments), 'Optimization' (Number of Database Records), and 'Fragmentation' (Variable-Length Segment Splits). Each chart compares data for HDAMVSD1 and HDAMVSD2.

Resource	DB NUM SEG
HDAMVSD1	~12,000,000
HDAMVSD2	~10,000,000

Date	DB NUM ROOT
8/5/15	~500,000
9/5/15	~1,000,000
10/5/15	~1,500,000

Resource	DB PCT NUM VLSEG SPLIT
HDAMVSD1	~40%
HDAMVSD2	~0%

# Cross Reference List

You can export the list as a CSV file.

IBM Management Console for IMS and DB2 for z/OS

Resources

Hello, Ikobayashi Log Out

Resources

Autonomics

Reports

Set Up

Help

Search

Resources with Symptoms

Oldest synchronization: Symptoms for newly discovered resources are not yet synchronized.

Resources with symptoms

Critical (12)

Severe (2)

Warning (6)

Resources with symptoms / Critical (12) / HDMVSAM / Cross Reference (PSB)

Cross Reference (PSB) - HDMVSAM

No filter applied

PSB Name	Number of DB PCBs	Number of TP PCBs	Number of GSAM PCBs	Compiler Language	PSBGEN Date	PSBGEN IMS Version	Number of Referenced DBDs
LABEL1	1	0	0	Assembler or COBOL	2015/10/27 12:45:00	13	1
LABEL2	1	0	0	Assembler or COBOL	2015/10/27 12:45:00	13	1
PALL010	30	1	1	Assembler or COBOL	2015/01/23 13:59:00	13	31
PHDM010	4	0	0	Assembler or COBOL	2015/01/23 13:59:00	13	3

Total: 4 Selected: 0

Launch the PSB Map Viewer by double click the PSB name.

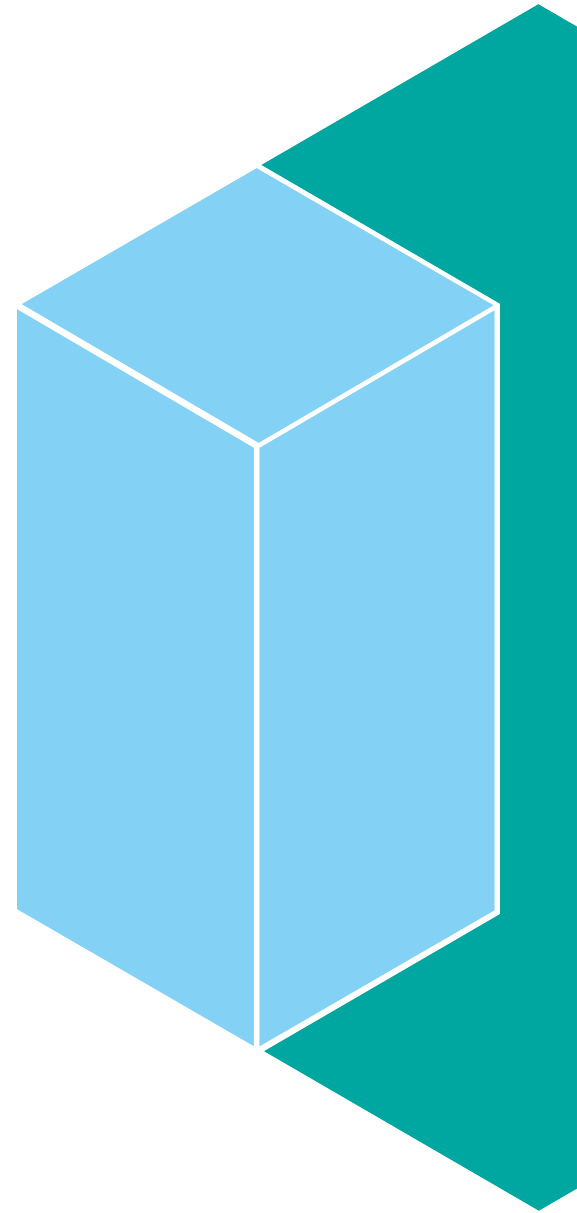
# Exported CSV file of Cross Reference

	A	B	C	D	E	F	G	H	I
	PSB Name	Number of DB PCBs	Number of TP PCBs	Number of GSAM PCBs	Compiler Language	PSBGEN Date	PSBGEN IMS Version	Number of Referenced DBDs	Referenced DBDs
1									
2	LABEL1	1	0	0	Assembler or COBOL	2015/10/27 12:45	13	1	HDAMVSAM
3	LABEL2	1	0	0	Assembler or COBOL	2015/10/27 12:45	13	1	HDAMVSAM
4	PALL010	30	1	1	Assembler or COBOL	2015/1/23 13:59	13	31	HDAMVSAM,CLASSRDB,COURSEDB,CUSTDB1,DBD@002A,DBHSAM1,DBSHISAM,DEDBFPSI,DEDBSDEP,DEDB0001,DRFDB1,DSCRSLBN,DSFACLBN,DSSCHLBN,DSSTULBN,FACILTDH,MDB2,HDMDB1,HISAMDB1,N0A000,ORDHDAM,SCHOOLDDB,STUDNTDB,DBSHSAM,TPFOHL1,TPFOHL12,TPFOHL13,TPFOH1,TPFOH2,TPFOH3,DBGSAM1
5	PHDM010	4	0	0	Assembler or COBOL	2015/1/23 13:59	13	3	HDAMVSAM,HDMDB2,HDMDB1
6									

The exported file has an additional column that contains the names of all the source DBDs that each logical DBD refers to.

The source DBDs are listed in the order they appear in the source code of the logical DBD, except that the selected source DBD is always listed at the beginning.

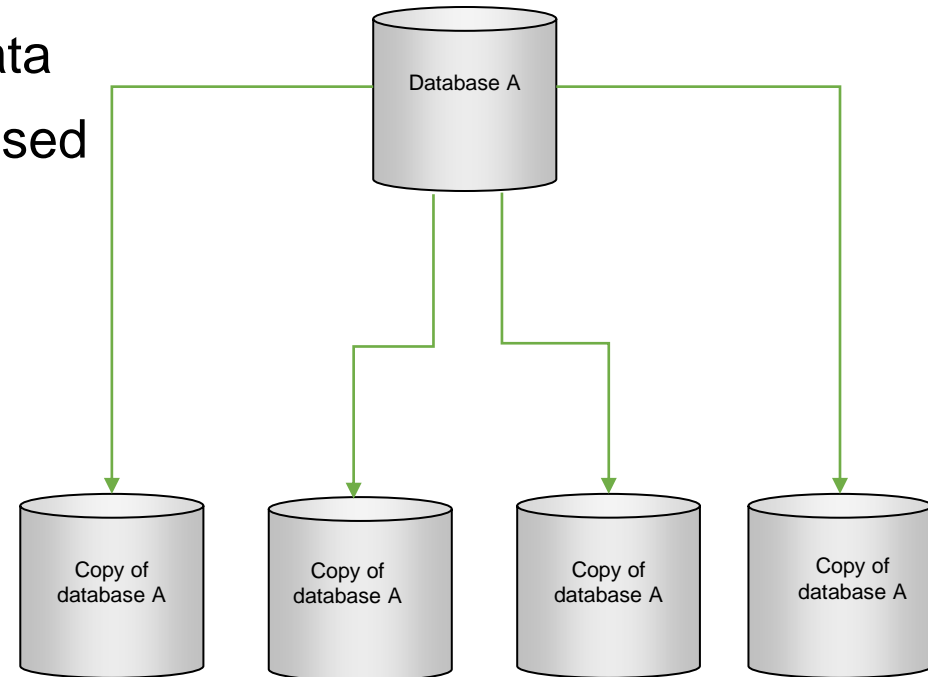
# Provisioning Test Data



# Creating Test Databases

## ■ IBM IMS Cloning Tool for zOS

- Automated data refresh operations
- Can dynamically create new databases
- Can mask or scramble sensitive data
- Can track new databases and be used to cleanup unused databases
- Single step zOS batch job

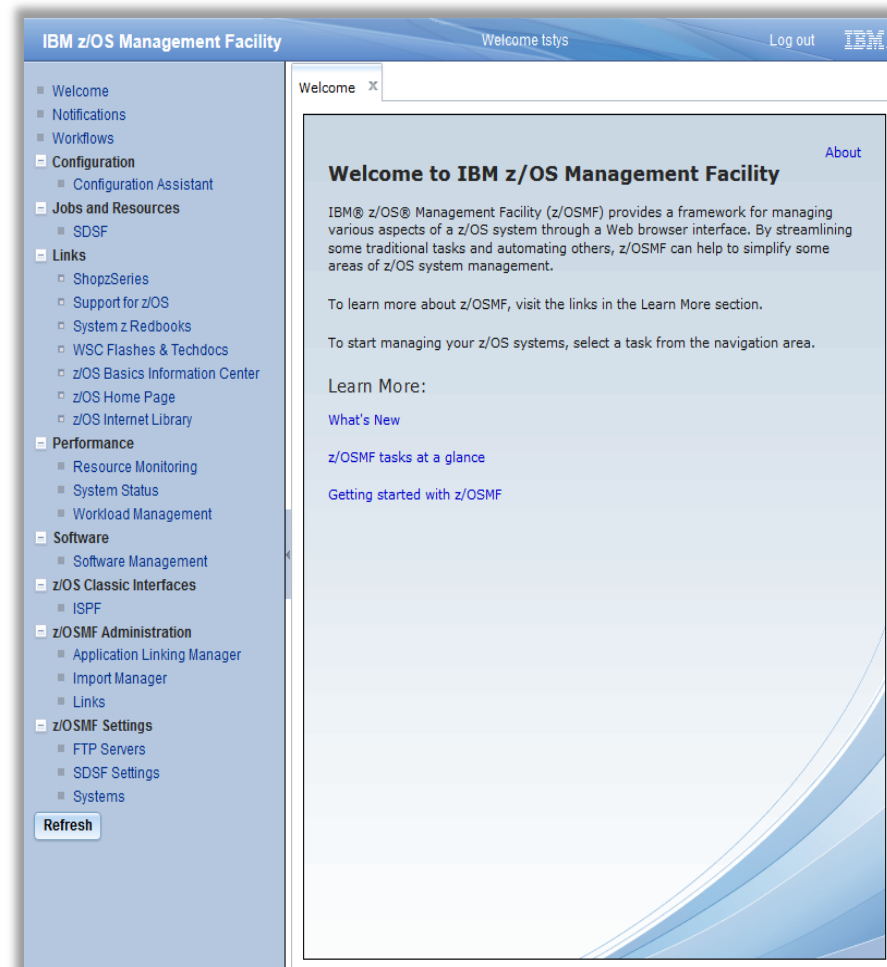




## What is zOSMF?

- **A browser-based management console for z/OS**
- **V2.1 for z/OS V2.1**
  - A product for z/OS (PID: 5610-A01)
  - Must be ordered separately from z/OS
    - Can be ordered in a CBPDO or ServerPac
  - S&S (program #: 5655-S29) must be ordered for support
- **Newest release: V2.2 for z/OS V2.2**
  - Generally available in September 2015
  - Became a base element of z/OS, delivered with the operating system
    - This removes the need to order z/OSMF separately

- **z/OSMF UI is developed to simplify and modernize z/OS system management**
  - The web interface itself is designed to be used by z/OS system programmers for day-to-day operations and administration of a z/OS system
- **This UI is not intended for database administrators**
  - IBM's strategic web-based console for data servers is still Management Console (and its follow-ons)
- **There are RESTful APIs for z/OSMF base services for external application development**

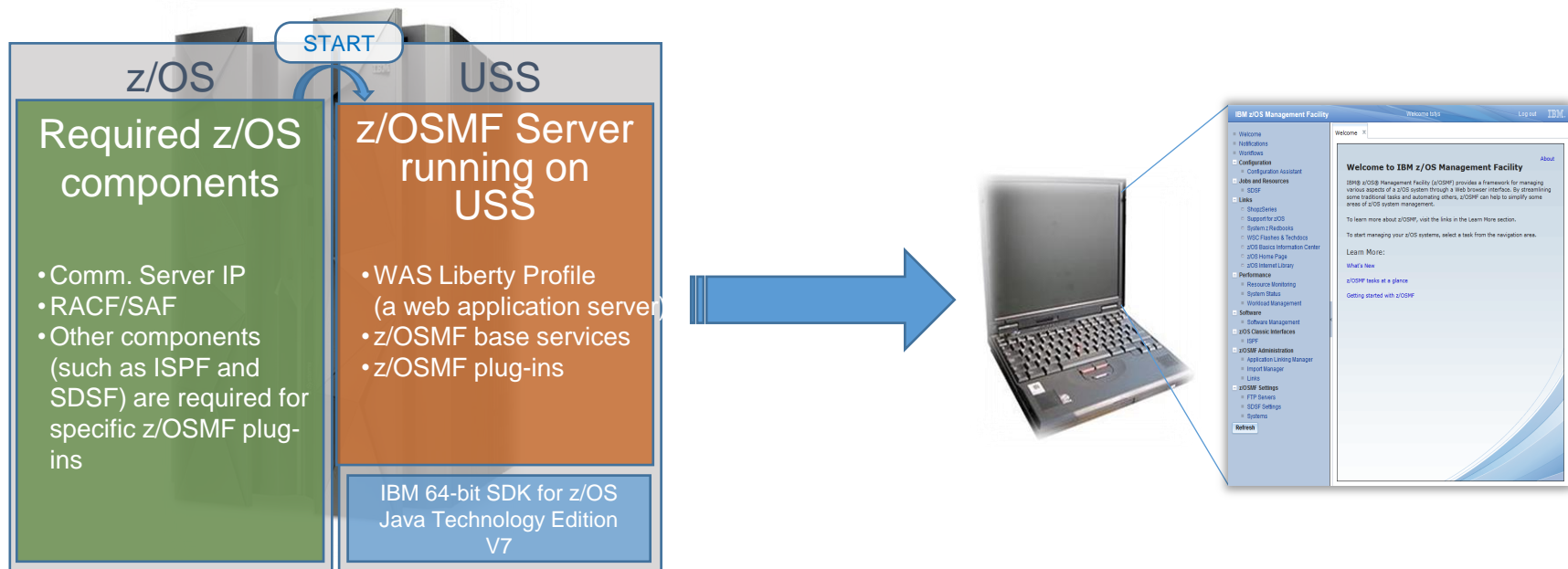


# Installation and Configuration

Documentation: [IBM z/OS Management Facility](#)

## Installation and configuration of z/OSMF

- A simple USS shell script (izusetup.sh) is used
- No need to install IBM Installation Manager to install z/OSMF

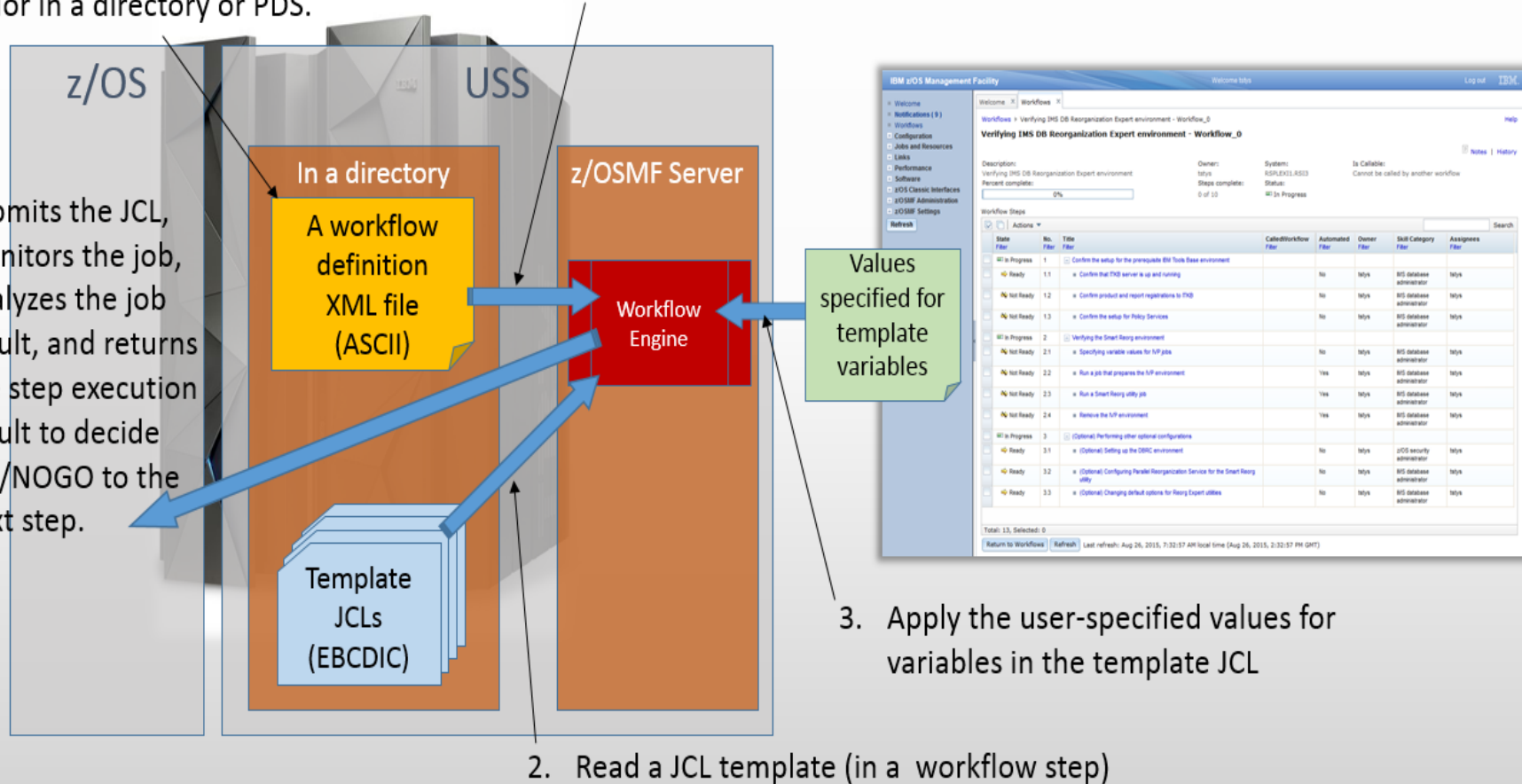


# zOSMF Workflow Process

Prep: Someone place a workflow file and JCL templates created by IBM or a vendor in a directory or PDS.

1. Create a new workflow (instance)

4. Submits the JCL, monitors the job, analyzes the job result, and returns the step execution result to decide GO/NOGO to the next step.



## z/OSMF Workflows capabilities

- **Defining tasks**
  - And task dependencies
- **Assigning tasks**
  - Based on skills and roles
- **Adding guidance and help for variables and task instructions**
- **Monitoring task progress**
  - Showing percentage of completion using task “weight”
- **Automating task execution**
- **Recording work memos**
- **Suspending and resuming tasks**

# zOSMF Workflows - Components

## ▪ Variables

- Variables are categorized
- Default values and validation types can be specified

## ▪ Workflow Steps

- JCL templates with variables can be included in workflow steps
- Variable names can be referred to in workflow steps

## ▪ Templates

- They are similar to the template JCLs used in IVPs

- Welcome
- Notifications
- Workflows
- Configuration
  - Configuration Assistant
- Jobs and Resources
- Links
- Performance
- Problem Determination
- Software
  - Software Management
- z/OS Classic Interfaces
- z/OSMF Administration
- z/OSMF Settings

Welcome x

Workflows x

Help

## Workflows

Simplifies tasks through guided step-based workflows, and provides administrative functions for assigning workflow responsibilities and tracking progress.

Actions ▾

Search

2 of 10 items shown. Clear filter

<input type="checkbox"/>	Workflow Name contains "procedure"	Description Filter	Version Filter	Vendor Filter	Owner Filter	System Filter	Status	Percent Complete
<input checked="" type="checkbox"/>	Procedure to provision an IMS TM-DB System - Workflow_0	Procedure to provision an IMS TM-DB System	0.1	IBM	tstys	RSPLEXI1.RSI3	In Progress	0%
<input type="checkbox"/>	Procedure to provision an IMS TM-DB System - Workflow_1	Procedure to provision an IMS TM-DB System	0.1	IBM	tstys	RSPLEXI1.RSI3	In Progress	0%

Total: 2 Selected: 1

Refresh

Last refresh: Mar 10, 2016, 8:40:52 AM local time (Mar 10, 2016, 7:40:52 AM GMT)



- Welcome
- Notifications
- Workflows**
- Configuration
  - Configuration Assistant
- Jobs and Resources
- Links
- Performance
- Problem Determination
- Software
  - Software Management
- z/OS Classic Interfaces
- z/OSMF Administration
- z/OSMF Settings

Refresh

Welcome x Workflows x

Workflows &gt; Procedure to provision an IMS TM-DB System - Workflow\_0

Help

## Procedure to provision an IMS TM-DB System - Workflow\_0

Notes | History

Description:

Procedure to provision an IMS TM-DB System

Percent complete:

0%

Owner:

tstys

Steps complete:

1 of 39

System:

RSPLEX11.RSI3

Status:

In Progress

Is Callable:

Cannot be called by another workflow

## Workflow Steps

Actions

Search

No filter applied

	State Filter	No. Filter	Title Filter	CalledWorkflow Filter	Automated Filter	Owner Filter	Skill Category Filter	Assignees Filter	
<input type="checkbox"/>	Complete	1	Specify IMS Criteria		Yes	tstys	IMS administration	tstys	
<input type="checkbox"/>	In Progress	2	IMS Installation preparation						
<input type="checkbox"/>	In Progress	3	Build the zCloud IMS						
<input type="checkbox"/>	In Progress	4	Start IMS Concomitant Address Spaces						
<input type="checkbox"/>	In Progress	5	Start the IMS Control Region						
<input type="checkbox"/>	In Progress	6	Perform IMS Restart						
<input type="checkbox"/>	Ready	7	Start IMS Connect		Yes	tstys	System Programmer	tstys	

Total: 45 Selected: 0

Return to Workflows

Refresh

Last refresh: Mar 10, 2016, 8:53:45 AM local time (Mar 10, 2016, 7:53:45 AM GMT)

# Thank You

