IMS Tools – The Next Generation

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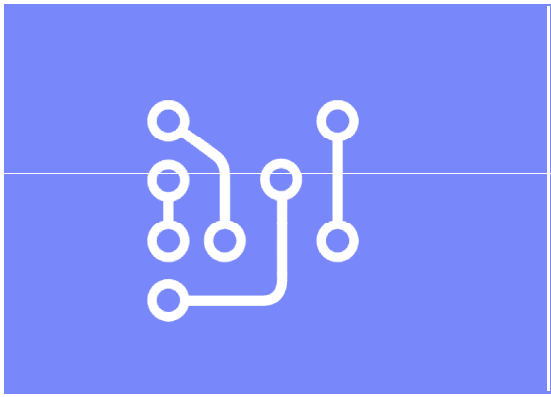
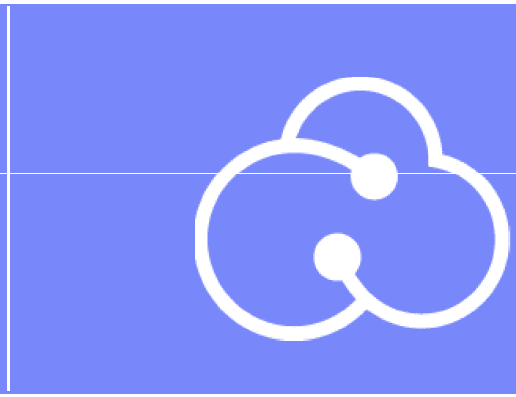
There are three important shifts fundamentally changing the way that decisions are made…

Data



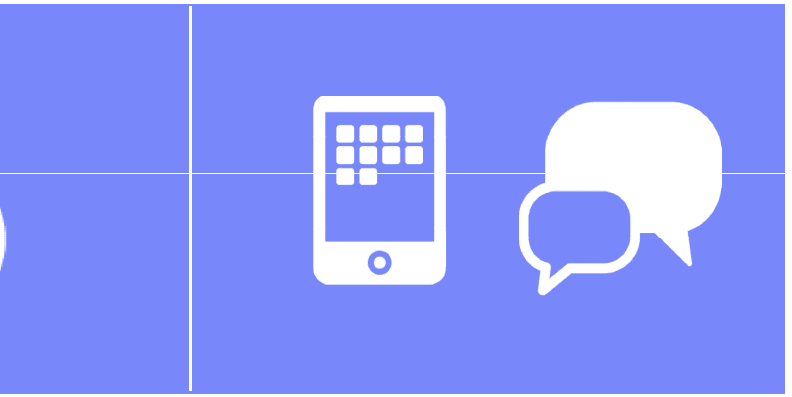
Data is becoming the world's new natural resource

Cloud



The emergence of cloud is transforming IT and business processes into digital services

Engagement

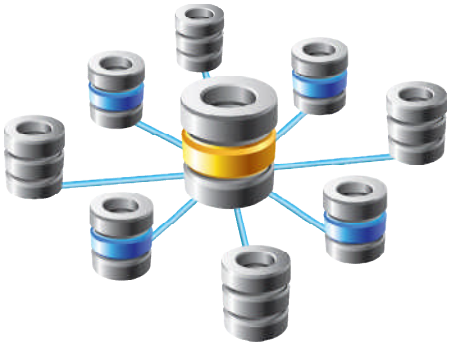


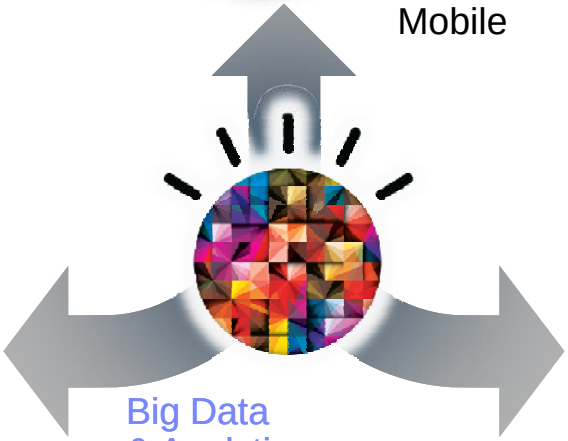
Social. Mobile. Security. Empowering people with knowledge, enriching them through networks and changing expectations.

Business and industries are being transformed by these shifts

Mobile

Systems of Record



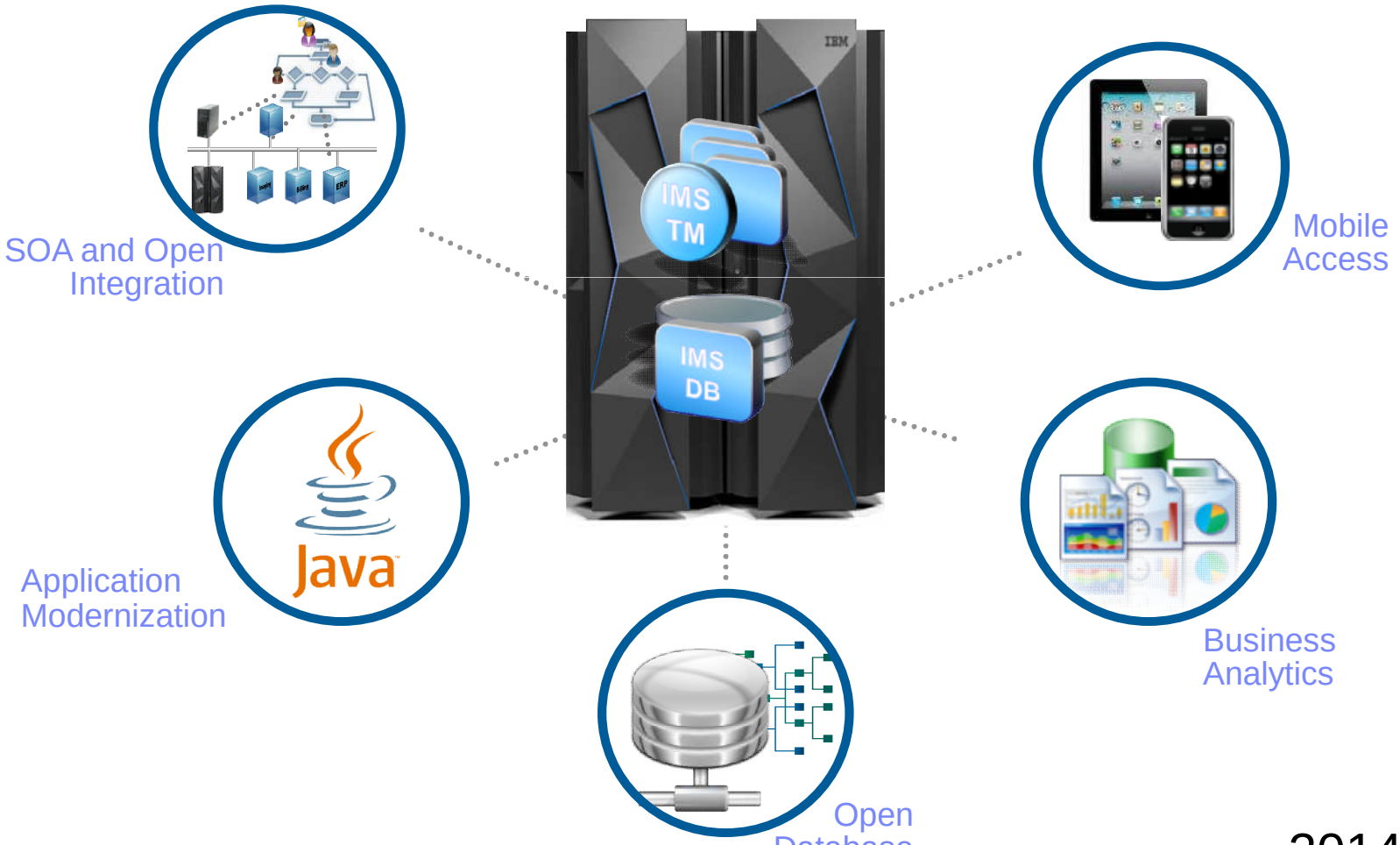


Big Data
& Analytics

Systems of Engagement

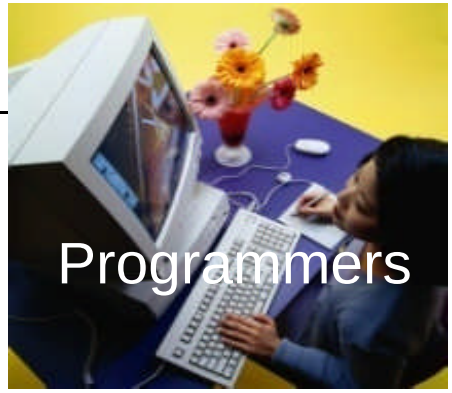
Cloud

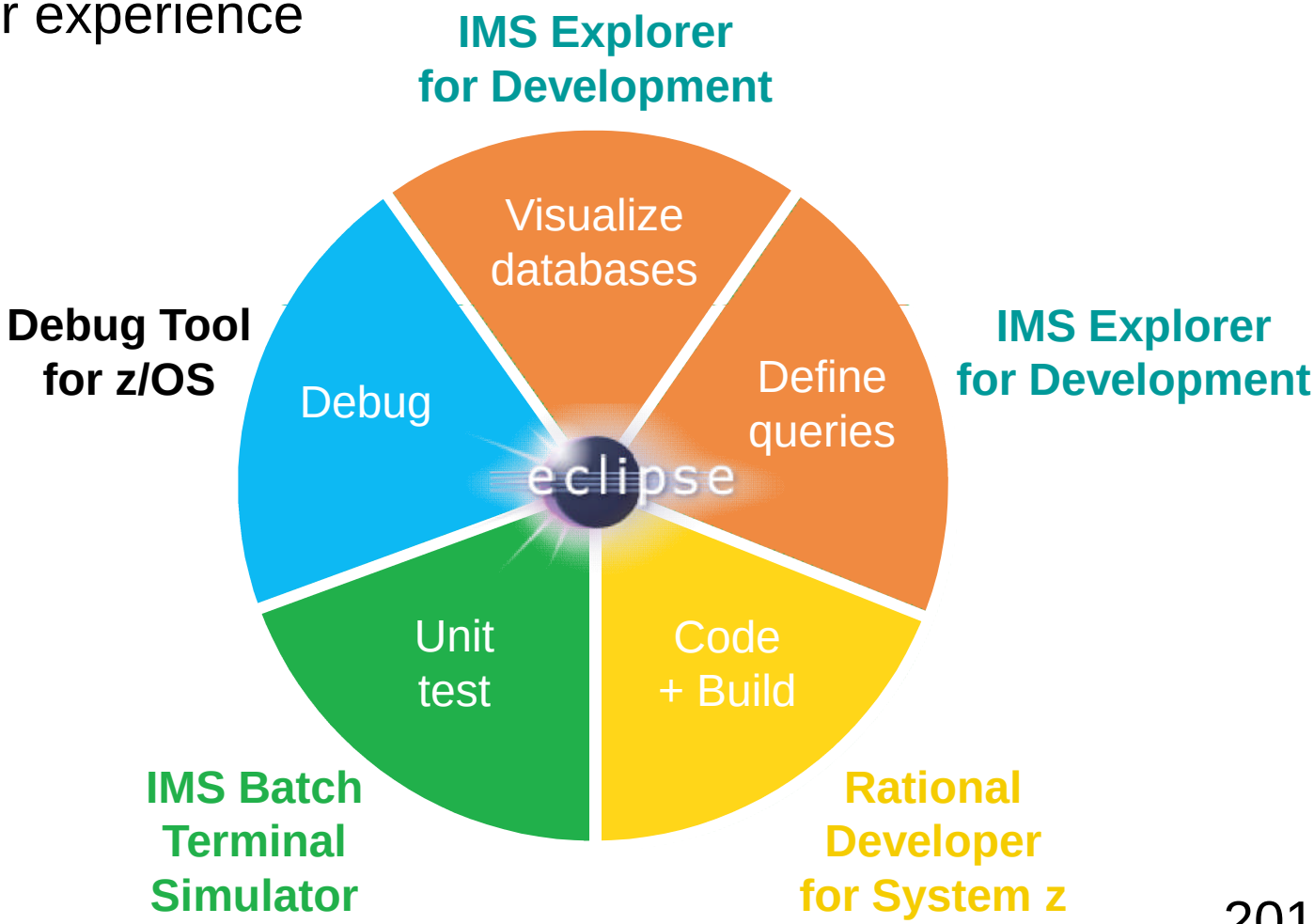
Leaders are innovating with IMS



Next Generation Developers

- Need tools that make them comfortable with z
- Needs tools that enable the modernization of the end-user experience





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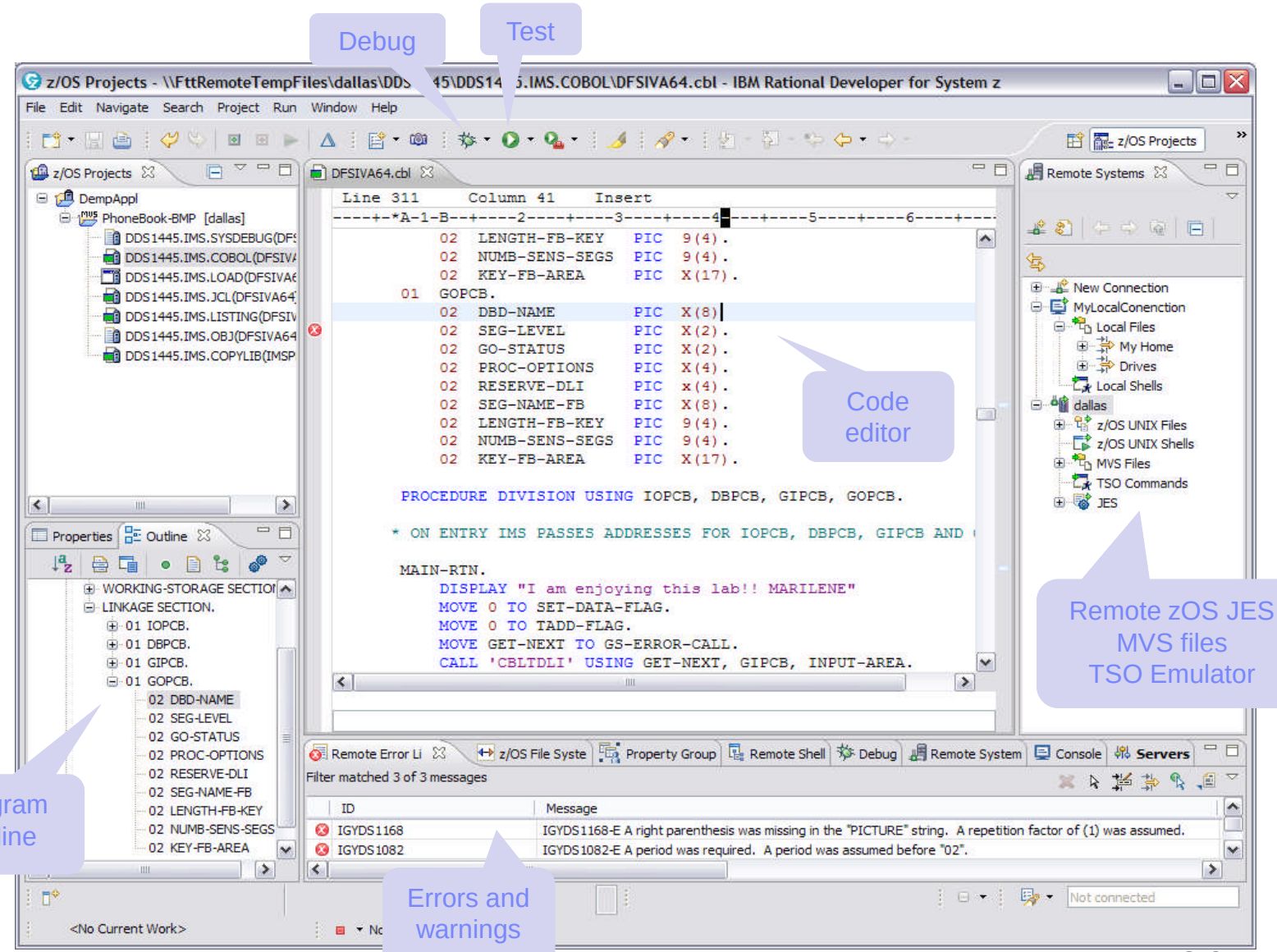
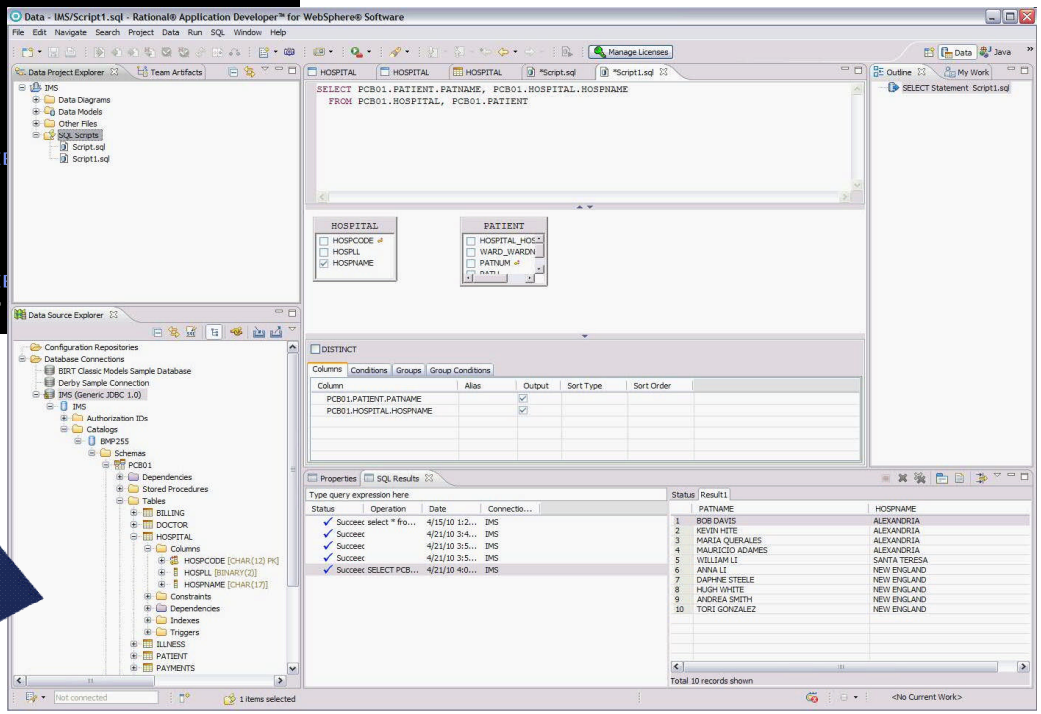
Integrated Environment for IMS Dev, Test, and Debugging



IMS Explorer for Development

- The IMS Explorer for Development is a tool to help with database visualization and querying

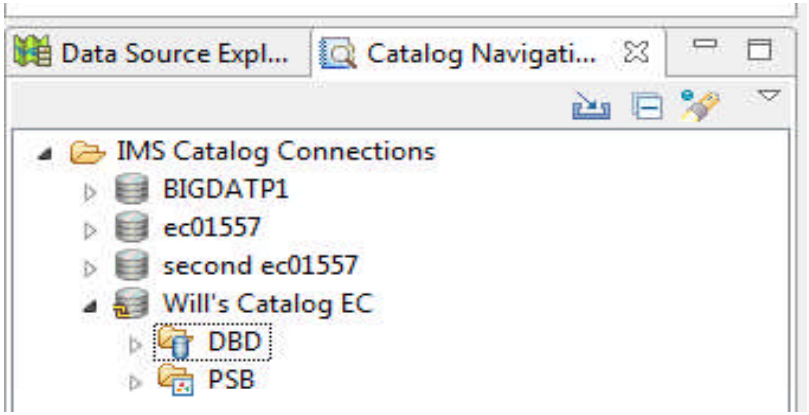
```
 $DDLT0   NEWJCL   F1  V 80  Trunc=80 Size=96 Line=25 Col=1 Alt=0
====>
00022 U ***************************************************************
00023 WTO Start of the DDLT0 stream
00024 U status card has all 1's so all tracing is ON.
00025 U status card has 00002 so we use the second PCB in the PSB
00026 S 1 1 1 1 1       00002
00027 WTO Now doing GN through the database
00028 L         GN
00029 E         DATA  KAA11**K1*
00030 E    01    K1        0005KAA11
00031 L         GN
00032 E         DATA  KBBB11**K2
00033 E    02    K2        0011KAA11KBBB11
00034 L         GN
00035 E         DATA  KAA31KEE31K3131113121313131414131513KE
00036 E    03    K3K5      0021KAA11KBBB11KAA31KEE31
00037 L         GN
00038 E         DATA  KAA31**K1*
00039 E    04    K1X       0026KAA11KBBB11KAA31KEE31KAA31
00040 L         GN
00041 E         DATA  KAA31KEE32K3132113221323132413251 3KE
PF 1 FIG        2 SCREEN 2    3 QUIT       4 FILE       5
PF 7 BACKWARD   8 FORWARD     9 XFILE     10 LEFT      11
```



2014

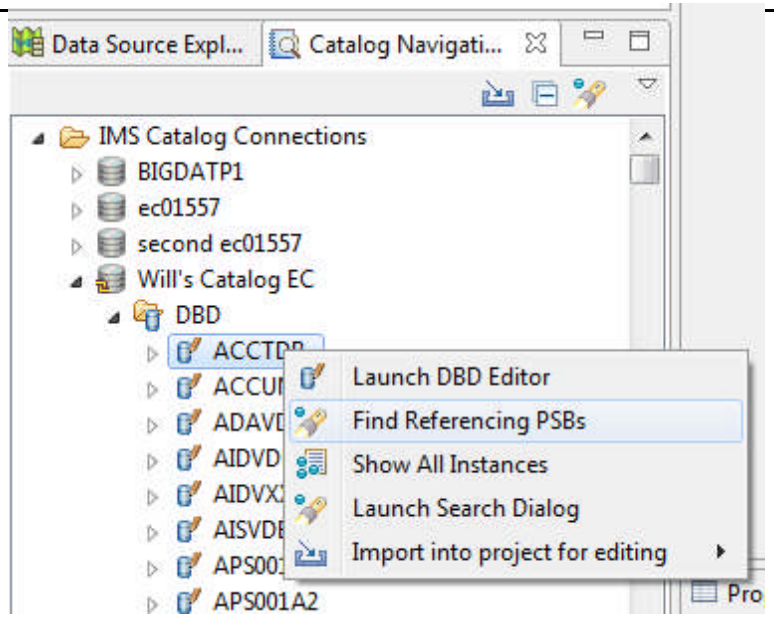
IMS catalog navigation view

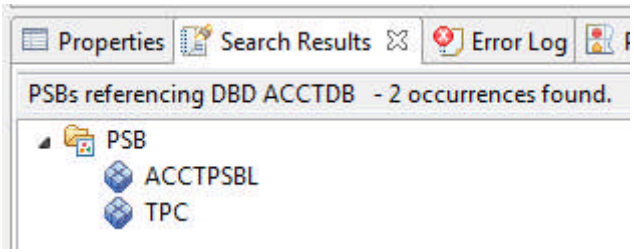
- Get a list of all the PSBs/DBDs in the system.



Built-in queries

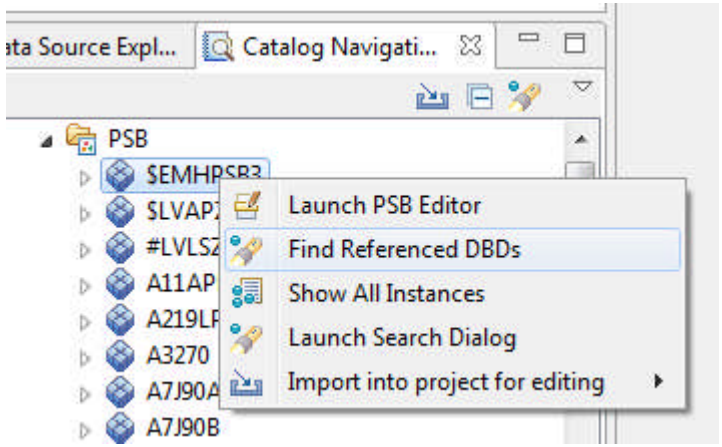
- Several built-in queries have been added to assist with resource and relationship discovery
  - "What are all the PSBs that reference this DBD?"

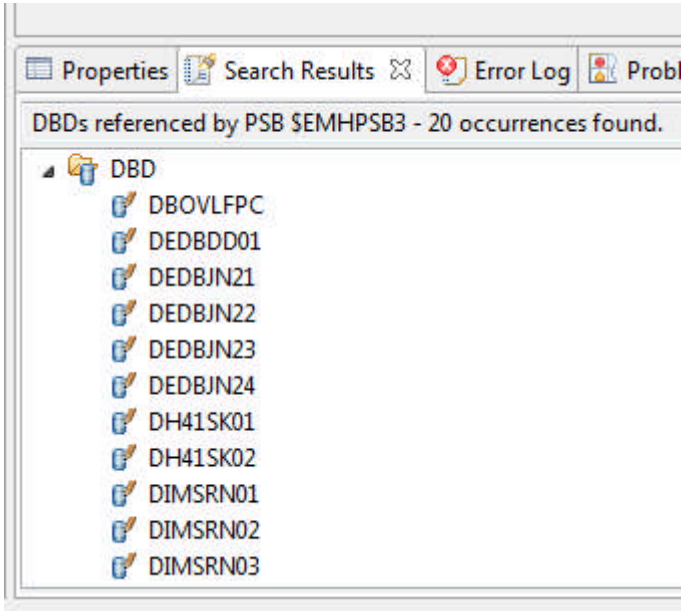




Built-in queries continued

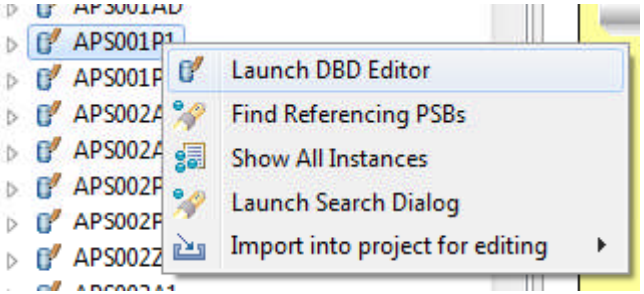
- "What are all the DBDs referenced by this PSB?"

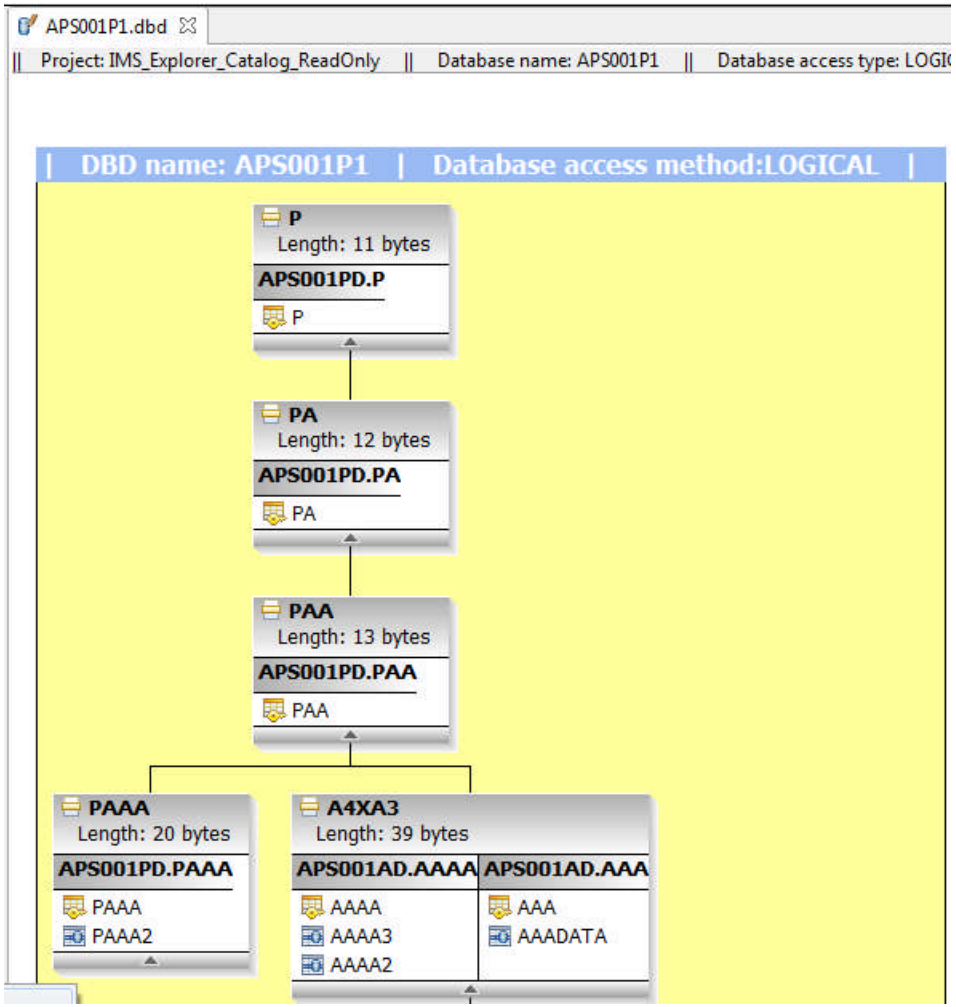




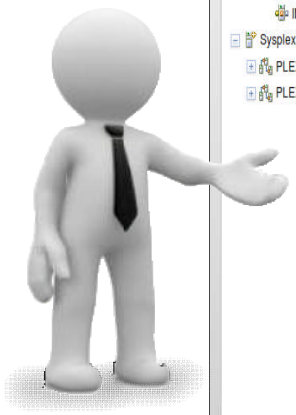
2014

Graphically view resources directly from the IMS catalog





Next Generation Systems Programmers
IMS Explorer for Administration 1.4



IBM Tools Base Administration Console for z/OS | View | Manage | Configure | admin

Resources

addl

Enterprise View

- Sysplex4
- Sysplex1
- Sysplex2
  - PLEX1
    - HWS1
    - IMS1
    - HWS2
    - IMS2
  - PLEX2
    - HWS3
    - HWS1
    - IMS3
- Sysplex3
  - PLEX1
  - PLEX2

Sysplex2 > PLEX1 > IMS1 > Transactions > EMHTX2

Transaction: EMHTX2

IMS Attribute	Value
Transaction Code	EMHTX2
Commit Mode	SNGL
Status	✓
Conversational	N
Fast Path	E
Limit Count	0
Class	1
IMSplex Member Name	IMS1
Message Queue Count	0
PSB	EMHPSB2
AOI Command Support	N
Completion Code	0
Definition Type	MODBLKS

Related Program

IMS Attribute	Value
Program Name	EMHPSB2
Status	✓
BMP Program	N
Dynamic Option	N
Definition Type	MODBLKS
Region type	IFP
Member	IMS1
Fast Path	E
Local Scheduled Type	PARALLEL
Completion Code	0
Generated PSB	N
Local Resident	N
Time Created	2013.248 12:57:41.58

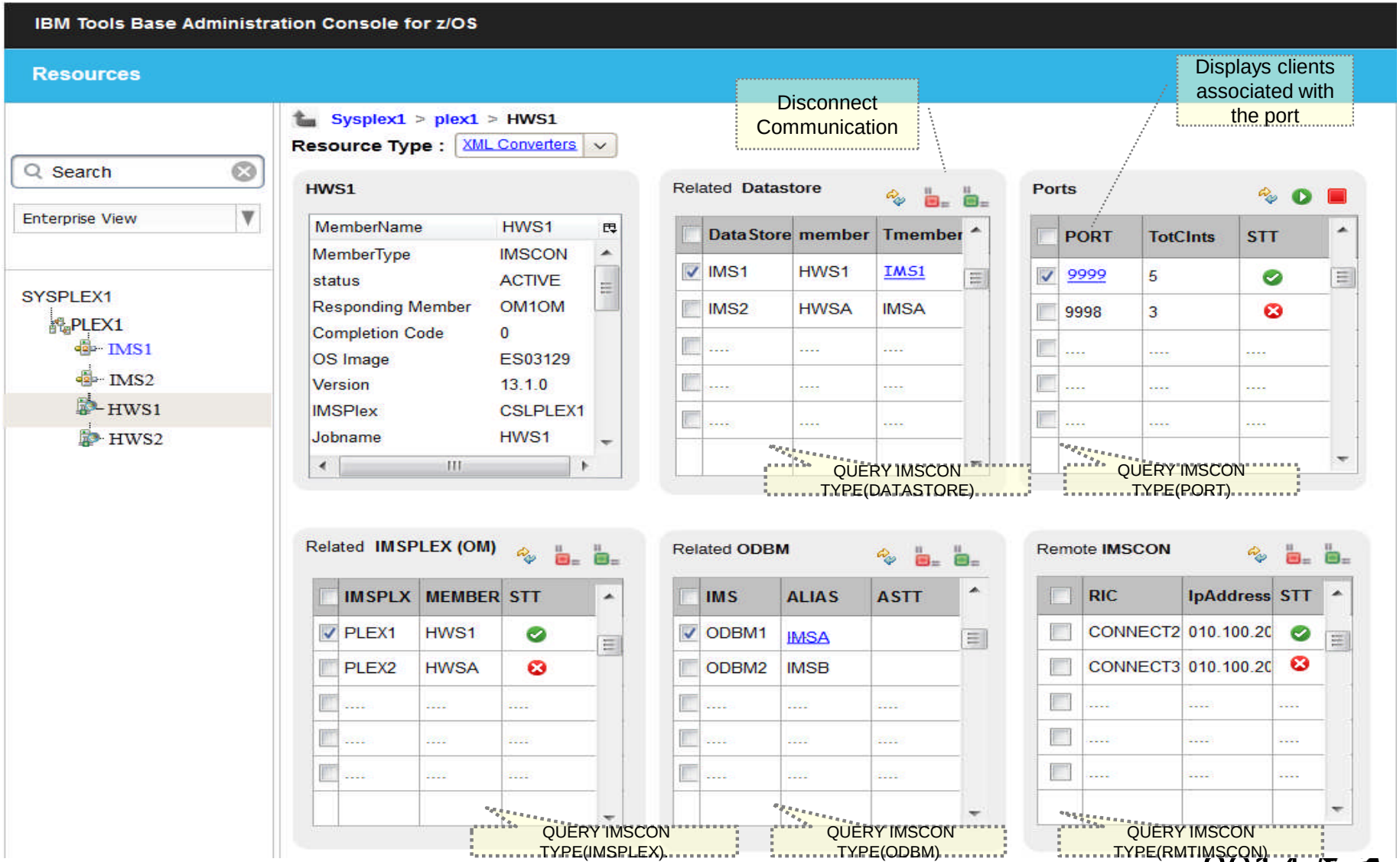
Related Routing Code

IMS Attribute	Value
Routing Code	EMHTX2
Status	✓
Program	EMHPSB2
Inquiry	N
Time Last Accessed	
Time Created	2013.248 12:57:42.12
Definition Type	MODBLKS
Time Last Imported	
Completion Code	0
Time Last Updated	
Member	IMS1

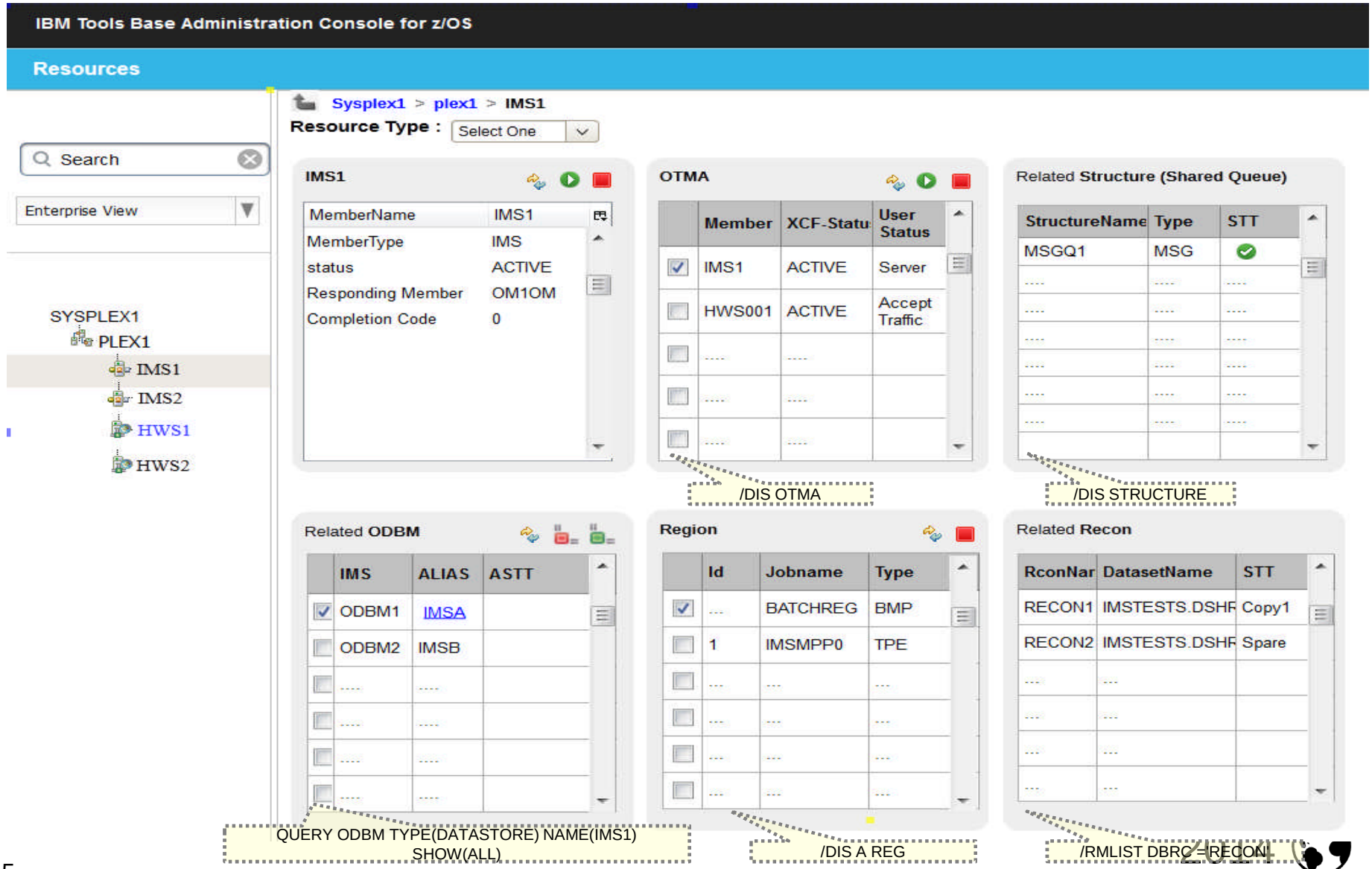
Related Databases

Database Name	Database Type	Status	Data Set Access Type	Member	Definition Type	Run Time Resident	Time Last Imported	Area Name	Time Last Accessed	Completion Code	Time Created	Time Last Updated
MSDBLM01	MSNR	✓	EXCL	IMS1	MODBLKS	Y				0	2013.248 12:57:41.59	
MSDBLM02	MSNR	✓	EXCL	IMS1	MODBLKS	Y				0	2013.248 12:57:41.59	
MSDBLM03	MSNR	✓	EXCL	IMS1	MODBLKS	Y				0	2013.248 12:57:41.59	
MSDBLM04	MSNR	✓	EXCL	IMS1	MODBLKS	Y				0	2013.248 12:57:41.59	
MSDBLM05	MSRF	✓	EXCL	IMS1	MODBLKS	Y				0	2013.248 12:57:41.59	
MSDBLM06	MSRD	✓	EXCL	IMS1	MODBLKS	Y				0	2013.248 12:57:41.59	

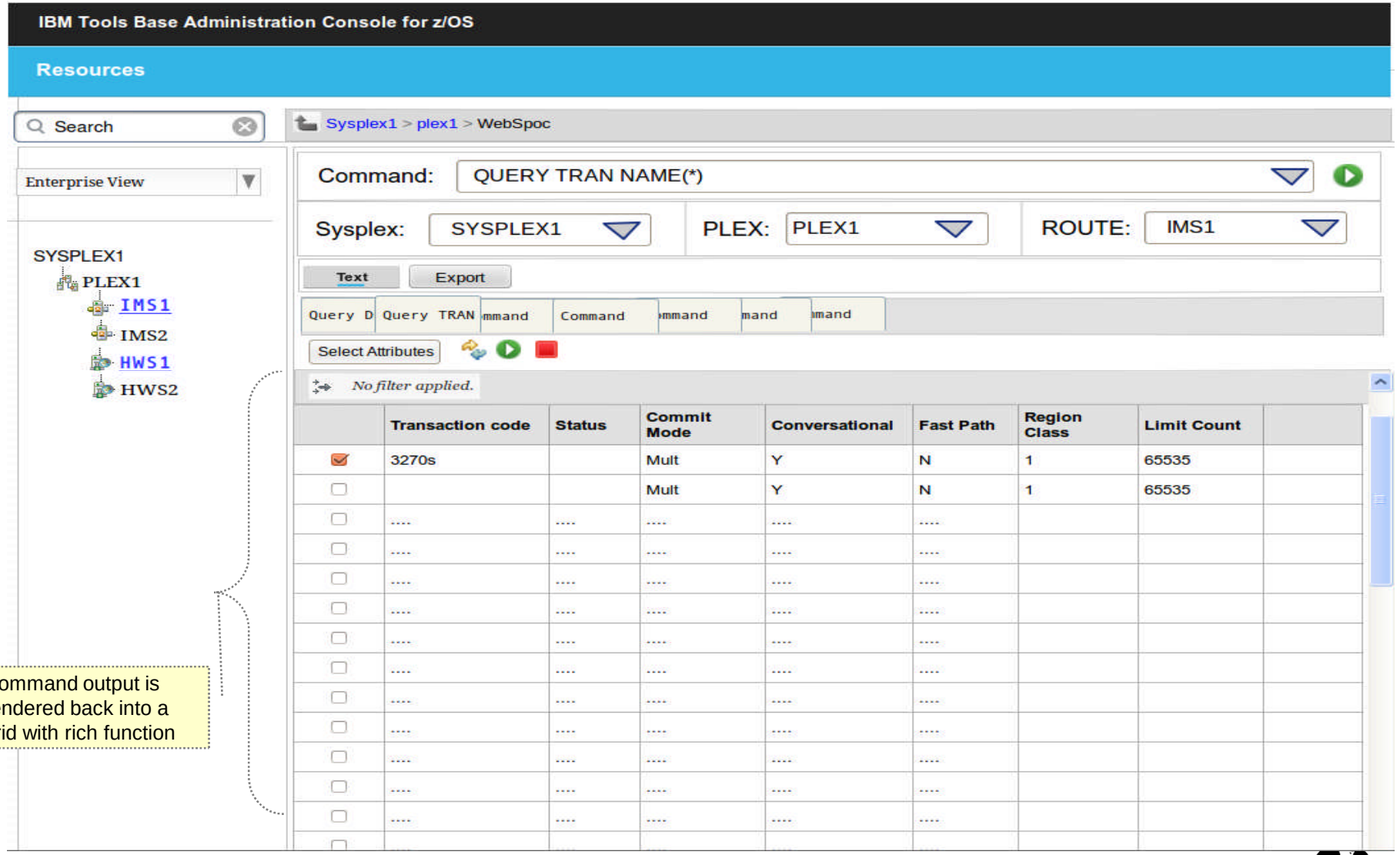
Providing deeper insight into IMS…



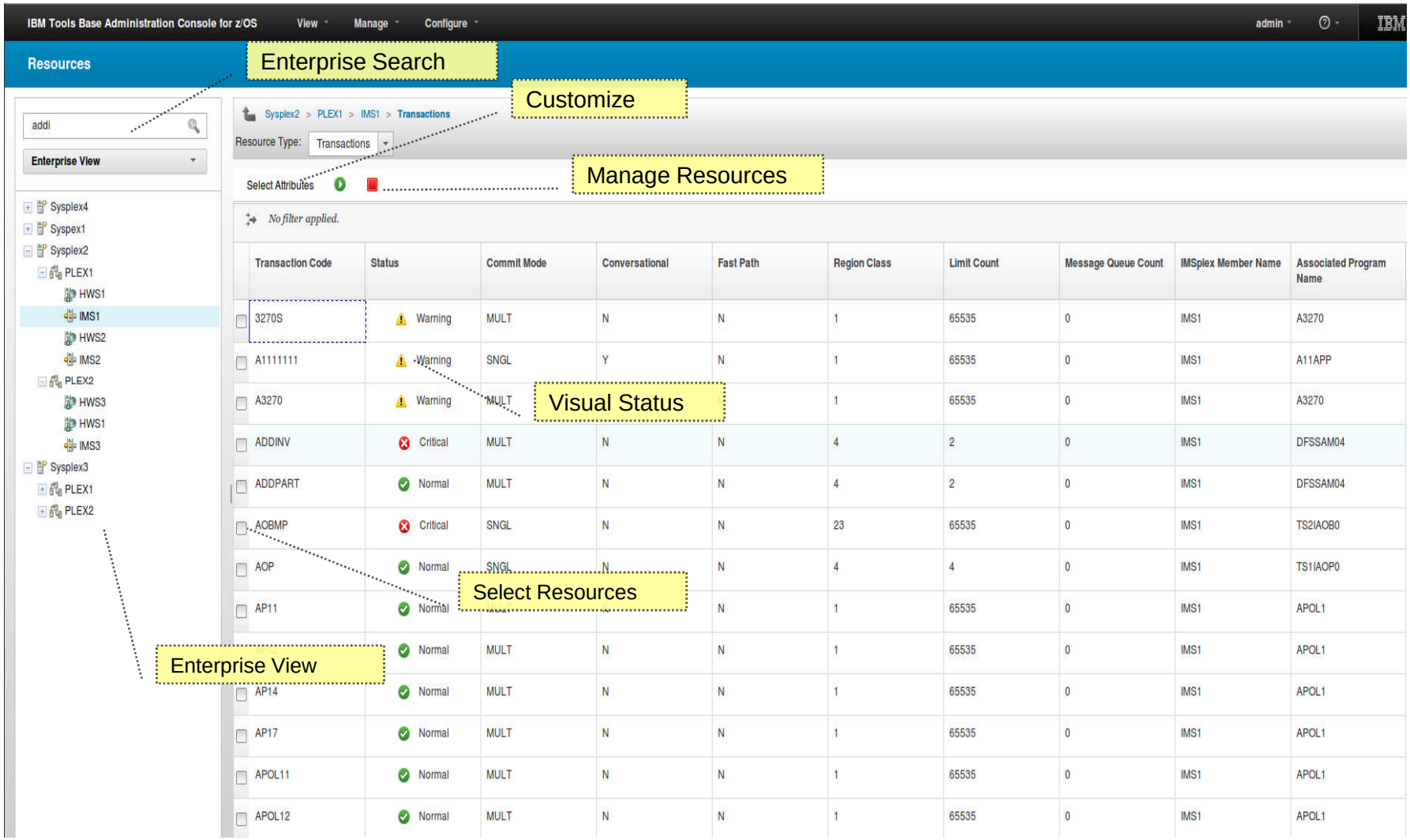
Providing deeper insight into IMS…



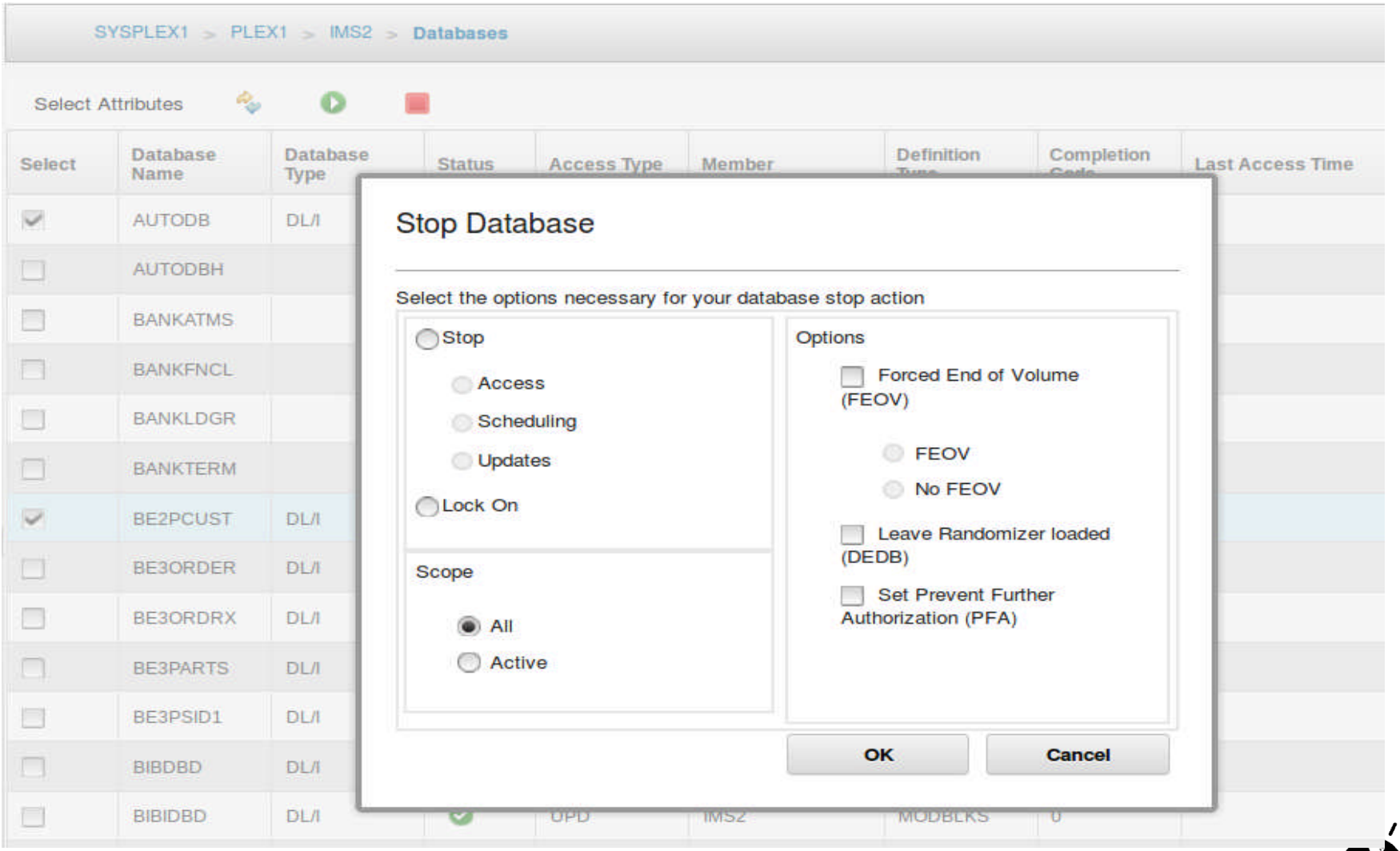
Command Entry



Manage IMS

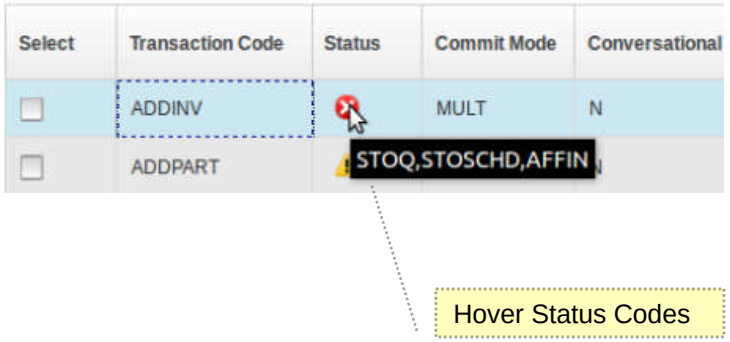


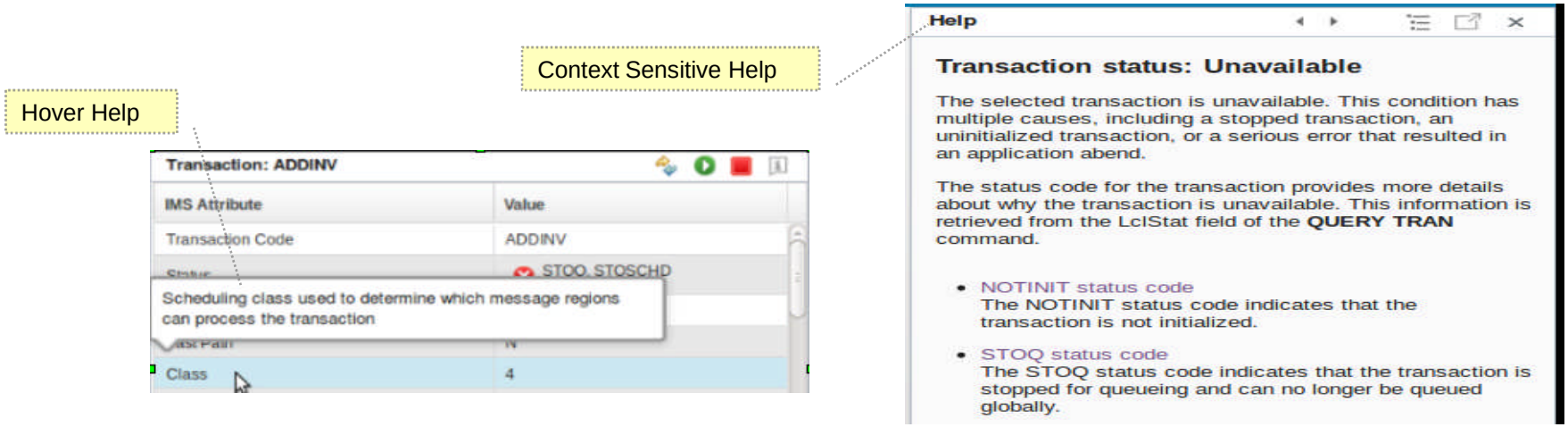
Manage – Start and Stop Resources



Manage - Statuses

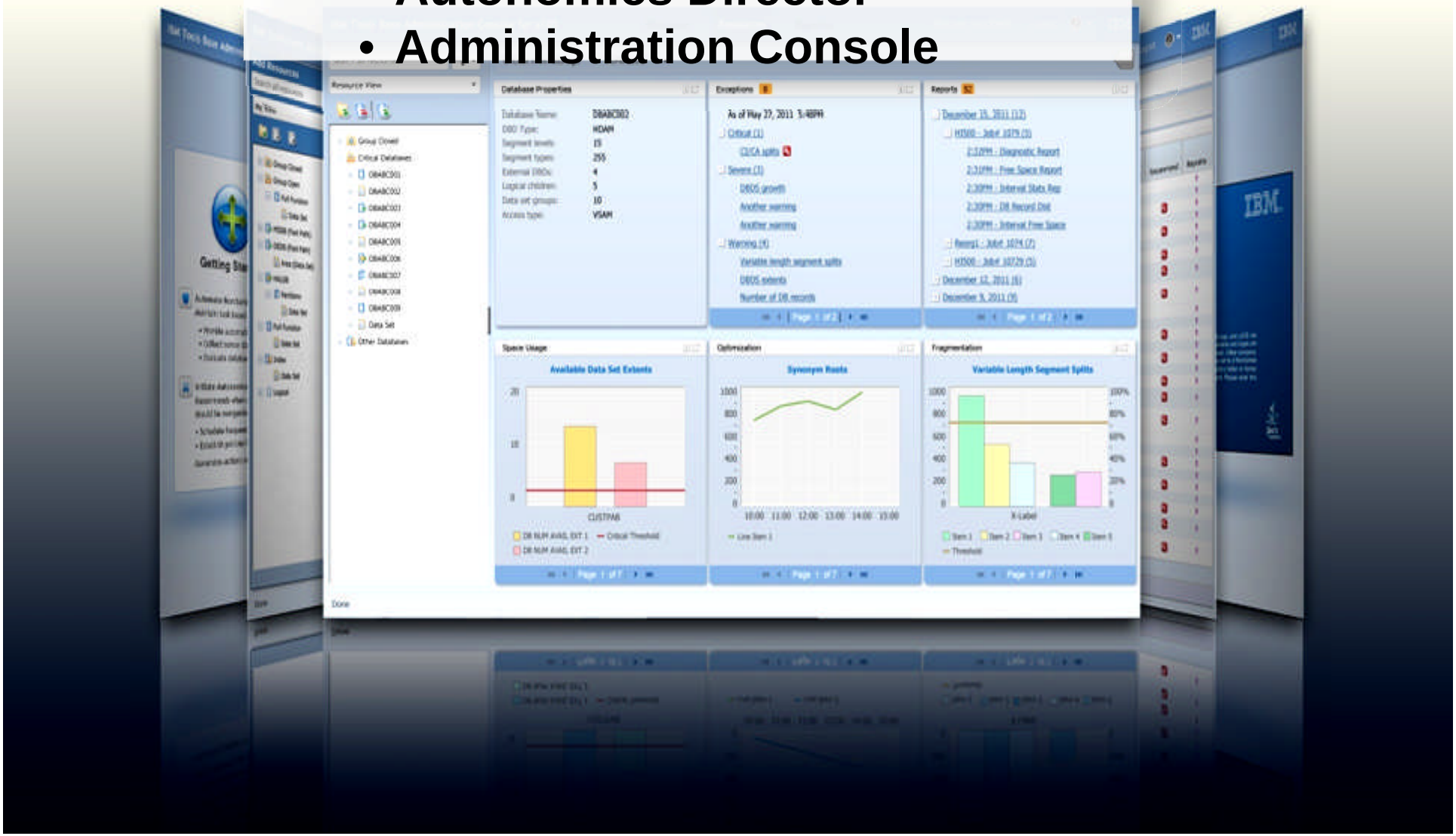
- Hover Help
  - Helpful to new users
- Hover Status Codes
  - Quickly understand a status
- Context Sensitive Help
  - Help specific to statuses





Next Generation DBA's

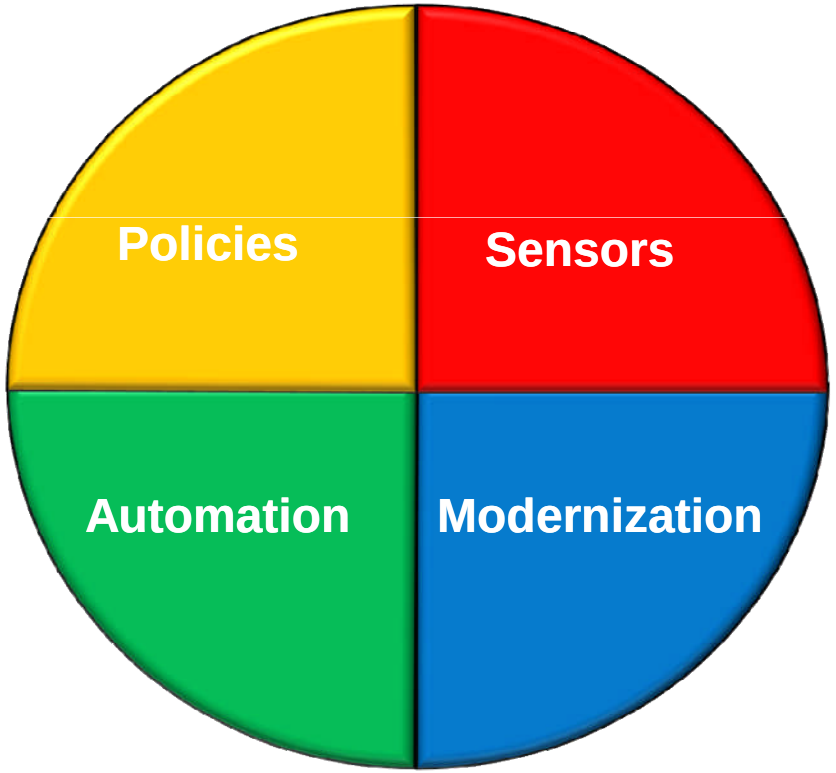
- IBM IMS / Tools
  - **Autonomics Director**
  - **Administration Console**



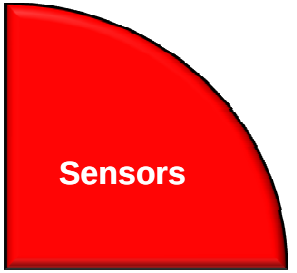
IMS Tools Autonomics Vision

Putting information to work

- Sensors collect resource statistics
- Policies evaluate sensor data and identify potential problems
- Automation orchestrates the collection and evaluation of sensor data
- Modernization presents an interactive modern interface for managing the system

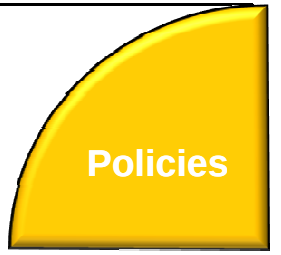


Sensors: Collecting the Basic Information You Need



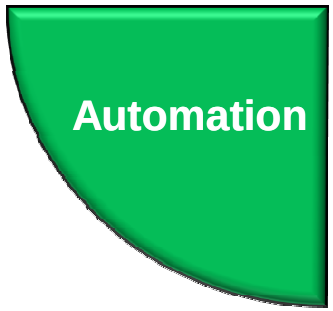
- Statistical point-in-time sensor data on your FF/FP Databases
  - Stored in IMS Tools Knowledge Base repository
  - Historically maintained per user specifications
  - Over 60 separate data elements related to space usage, optimization, and fragmentation
    - data set extents, DASD volume usage, data set free space, roots distribution, RAP usage, CI/CA splits, and IMS free space, etc
- Two methods of collection:
  - Standalone database Sensor utilities for full-function and Fast Path databases
  - Integrated with existing IMS Tools
- Integrated Tools support
  - High Performance Image Copy, High Performance Pointer Checker
  - Fast Path Analyzer, Fast Path Online Pointer Checker

Policies: Using Sensor Data to Make Decisions



- Policy definitions are used to evaluate specific database states
  - Threshold values are compared against sensor data for a given database or group of databases
  - When thresholds are met or exceeded, exceptions occur
- Works “out of the box”
  - Ships with predefined policies and threshold values
  - Full ISPF interface provided for policy management
- Customizable to fit your shop
  - You can define your own sets of threshold values
  - Customize the messages sent when exceptions do occur
  - Specify who receives which messages and how
    - WTO, e-mail, or text

Automation: Delivering on our Vision



- IBM Tools Autonomics Director 1.3 (Passive)
  - Automates collection and analysis of Sensor Data
  - Recommends when databases should be reorganized
    - With email or text notifications
  - Provides a scheduling feature that allows you to control how frequently sensor data is collected and how frequently policies are evaluated
  - Flexible scheduling around pre-defined PEAK times

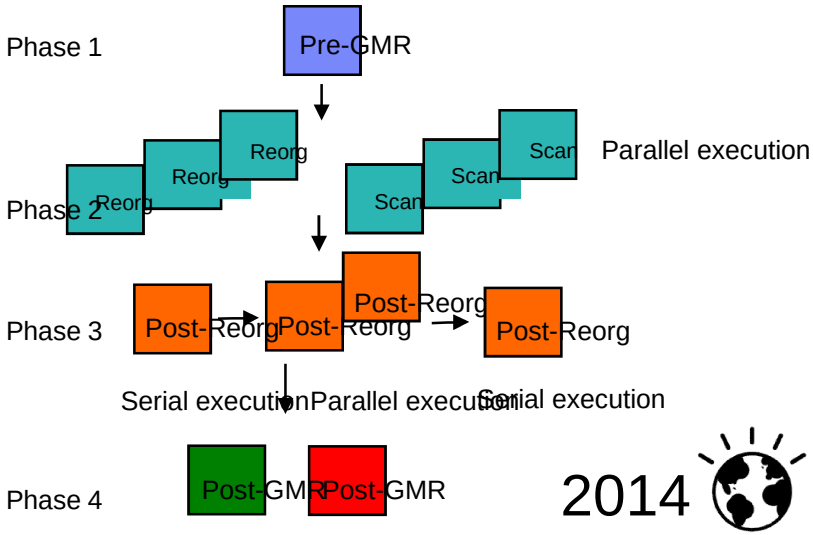
- IBM Tools Autonomic Director 1.4 (Active)
  - Actively initiate recommended actions on user-defined database groups
    - Discovery feature for identifying related database groups
    - Ability to manage and coordinate reorganization of multiple IMS database groups as if reorganizing a single database
    - Flexible scheduling only in pre-defined Maintenance windows

Group-managed reorganization (GMR)

- Automatically Reorganize DB Groups
  - Reorganize multiple databases in parallel
    - Parallel reorganization for databases with external logical relationships
    - Any group of databases that need parallel reorganization
  - Only reorganizes DBs in group that need it
  - Initiates and controls entire job flow
  - Architected to support distinct phases
  - Parallelism and flexibility are primary driver

- Phases:
  - Pre-GMR phase
  - Reorganization phase
  - Post-reorg phase
  - Post-GMR phase

Group-managed reorganization plan

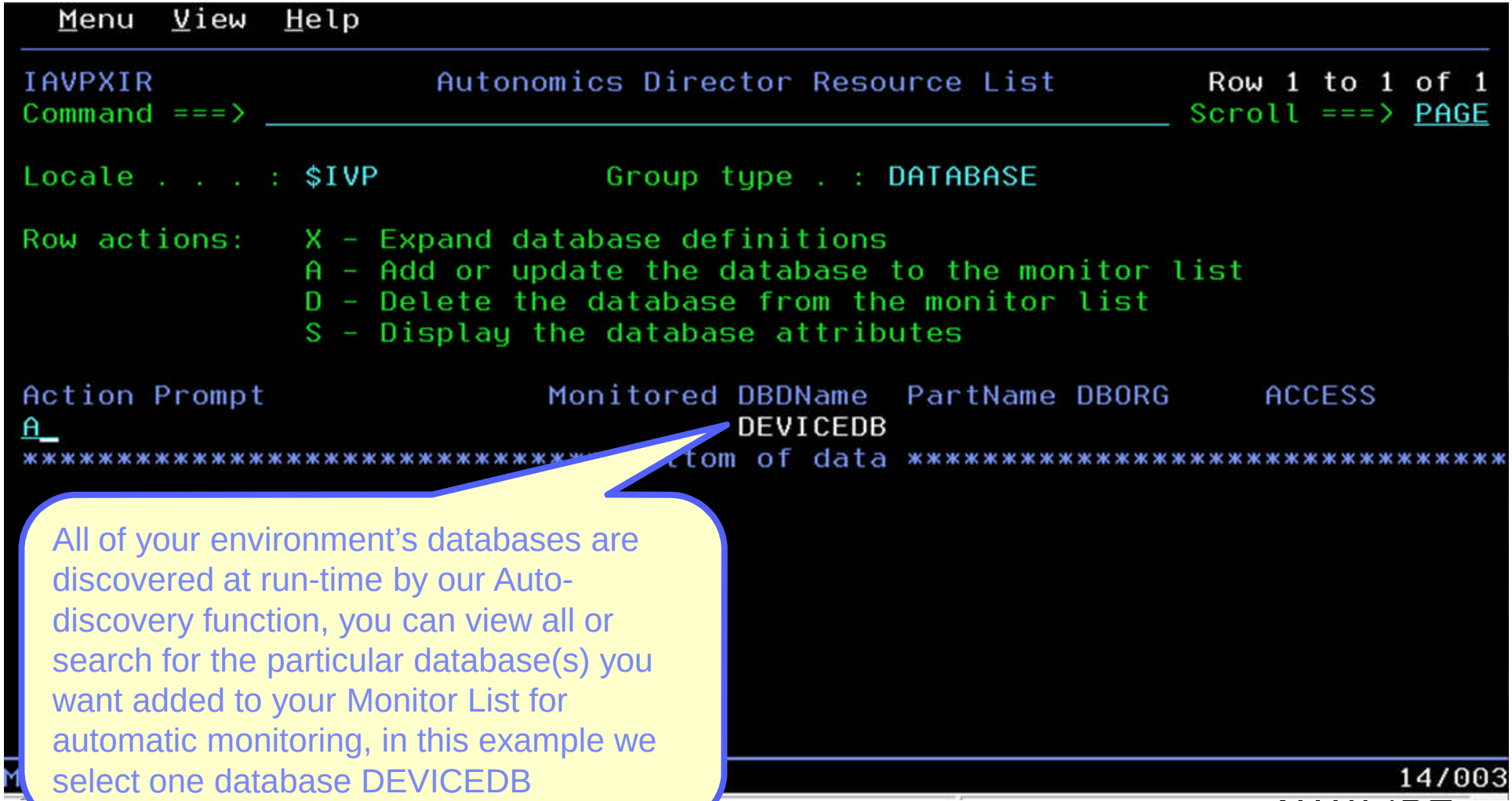


Autonomics Director Overview

- Automatic collection and evaluation of Sensor data
  - Can integrate with existing IBM Tools image copy and pointer checker processes
  - Based on user-defined policies and thresholds
- Provides recommendations for reorganizations
- E-mail or text notification when a reorganization is recommended
- Flexible scheduling around peak workloads
  - Doesn't interfere with production throughput or response time
- Works with existing job schedulers
- Exploits the power of IMS sysplex
  - Automatic failover and workload management support
- Easily customized for groups or individual databases
  - Auto-discovery of databases and existing database groups
  - User-defined groupings: "These are the databases that I'm responsible for"
  - Group-assigned defaults propagate to individual databases

Adding database(s) to your monitor list

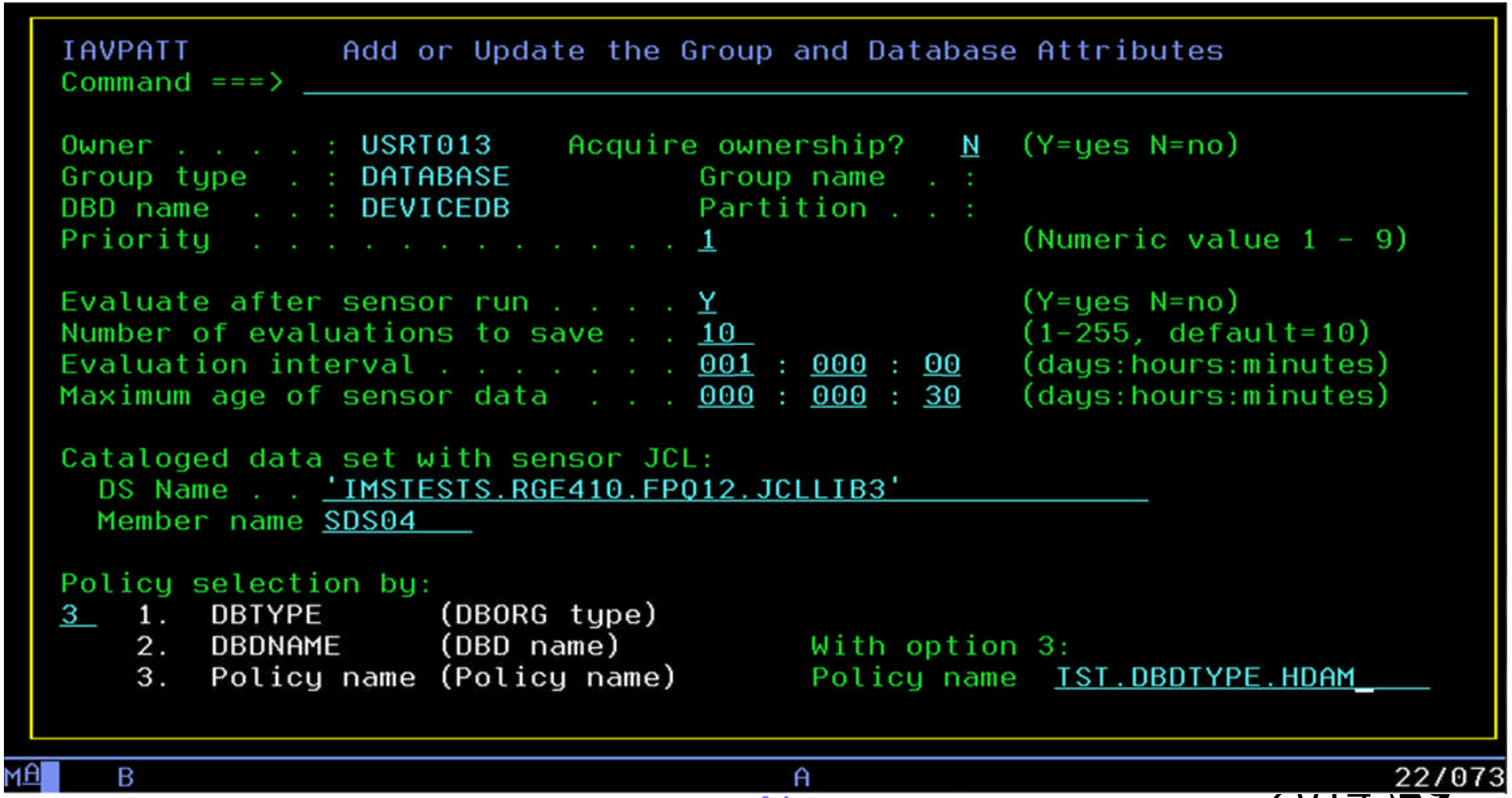
- Your Monitor List is the custom list of databases you're interested in…



All of your environment's databases are discovered at run-time by our Auto-discovery function, you can view all or search for the particular database(s) you want added to your Monitor List for automatic monitoring, in this example we select one database DEVICEDB

Setting your monitoring criteria

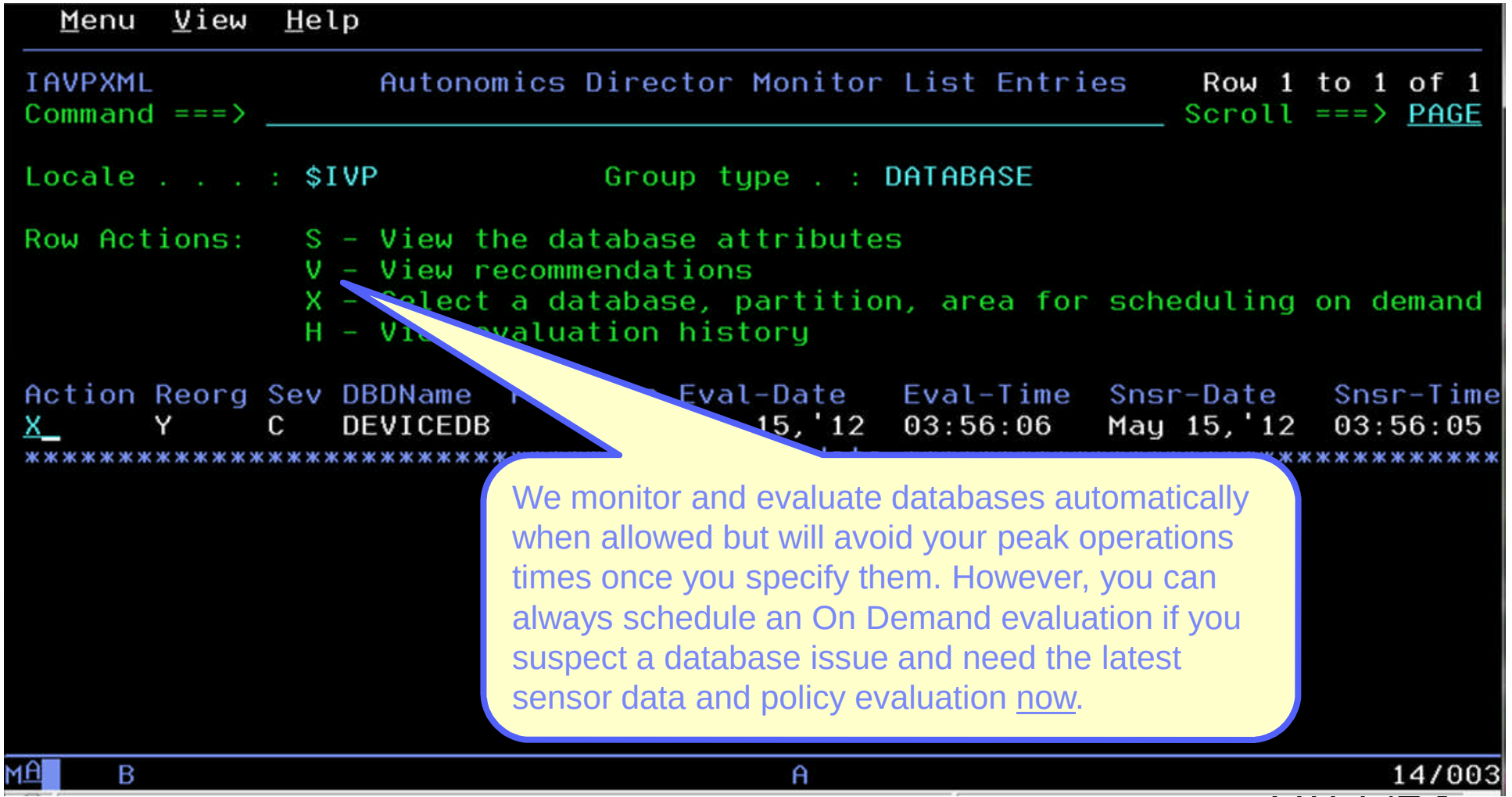
- You can set how often the database should be evaluated, how many evaluations to save, and which policies to use in the evaluation



Name

Scheduling an evaluation On Demand

- Databases will be monitored and evaluated automatically once you specify your peak times (not shown) but you can always schedule an On Demand evaluation



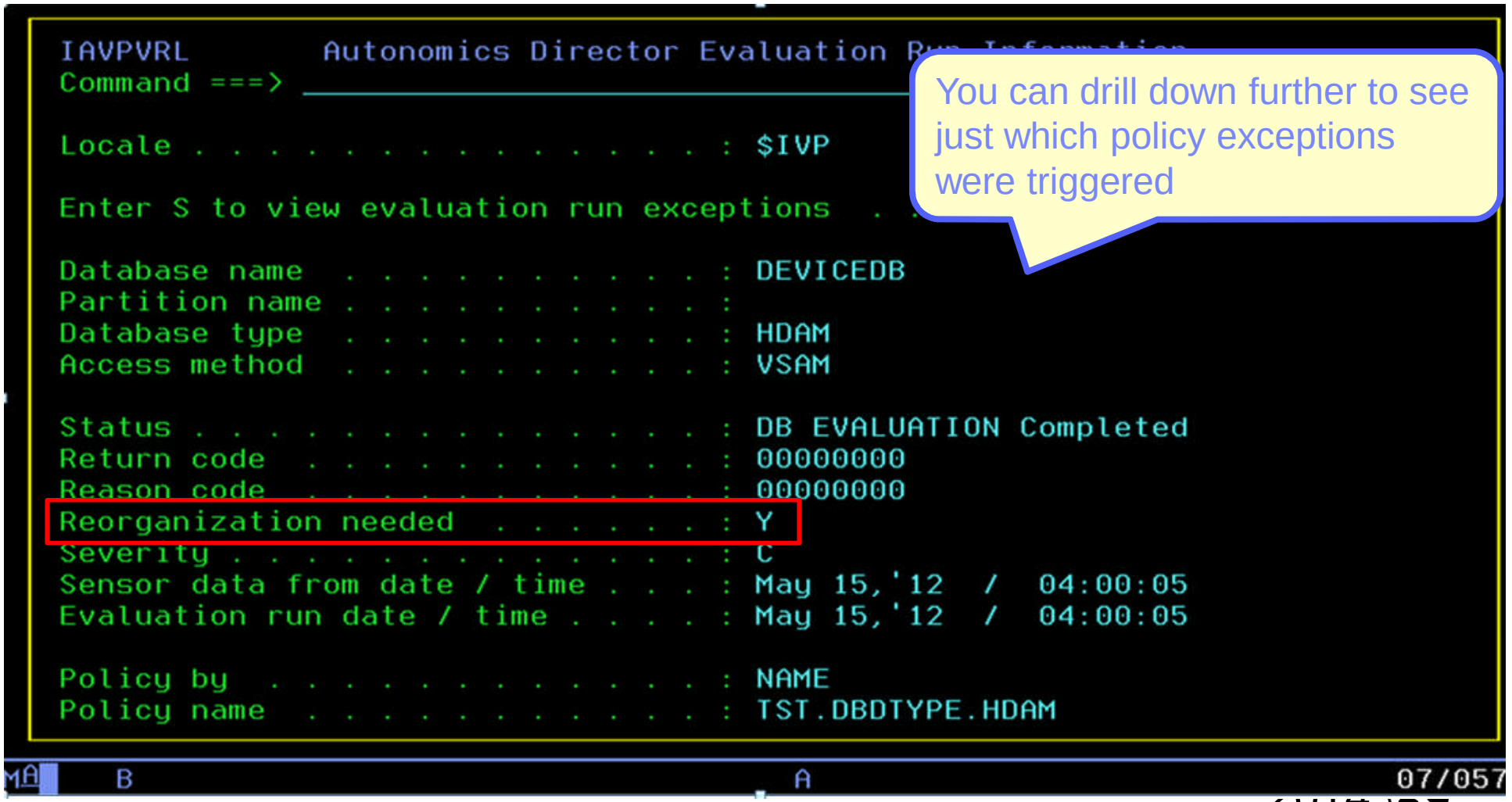
Immediately…

- Maximum flexibility is provided to get you the most current information available when you need it, so decisions are never made using stale data

```
IAVPXAD       Schedule Sensor or Evaluation Job Run On Demand
Command ===> ____________________________________________________________

Enter Y to select run types:
  Sensor run . . . . Y
  Evaluation run . . Y

Monitor list member:
  Database name  . . . . : DEVICEDB
  Partition or area name :

Enter schedule time option:
1_   1.  Immediately
     2.  At next available period or next available period
         after the specified date
     3.  On specified date

With option 2 or 3:
    Month __  Day __  Year  __  Time . . __ : __ __  (hh:mm am/pm)
```

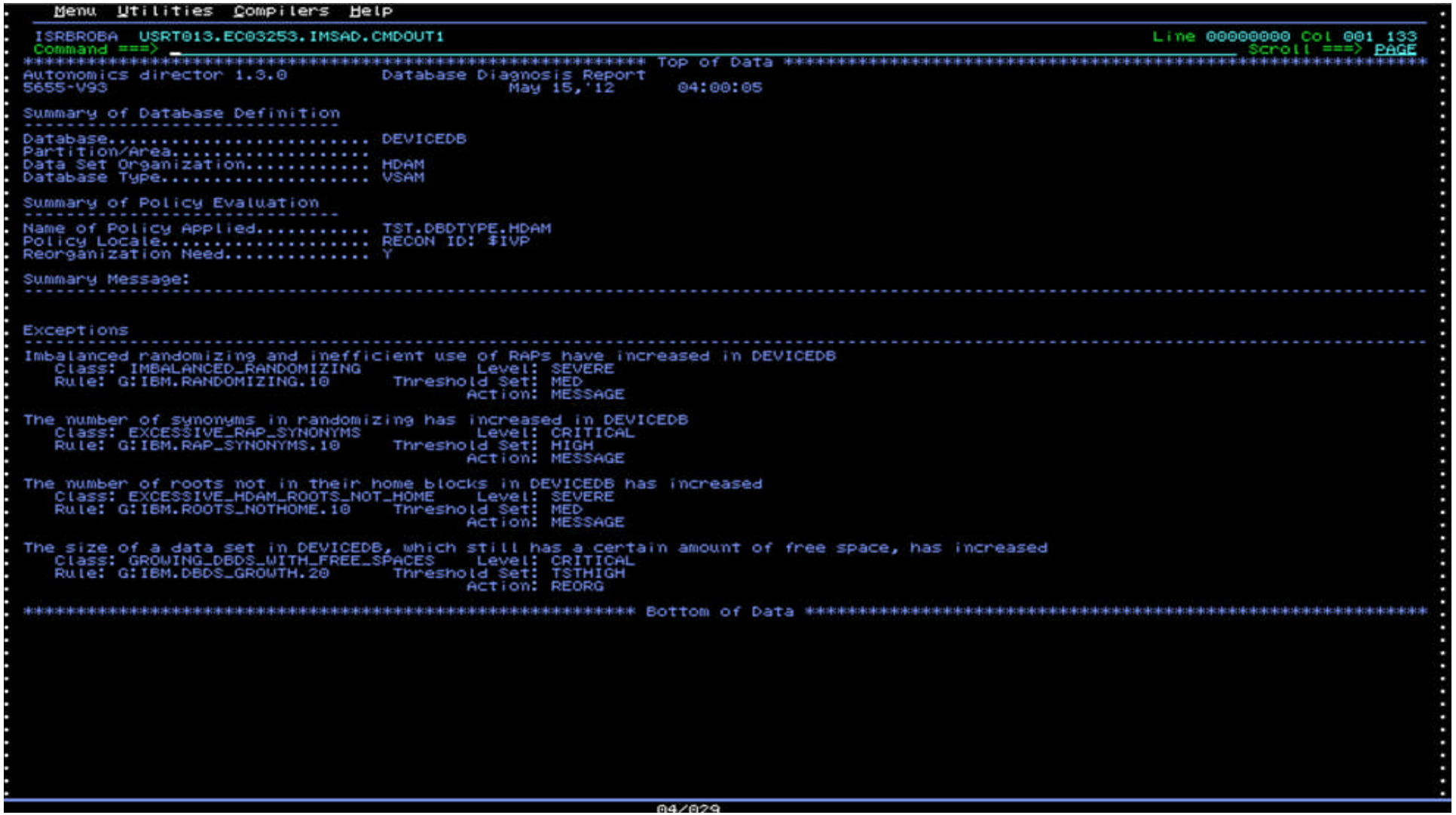
View the resulting recommendations

- We keep it simple, if a database reorganization is needed based on the policies you set you'll see 'Y' if not, you'll see 'N' … no guess work here



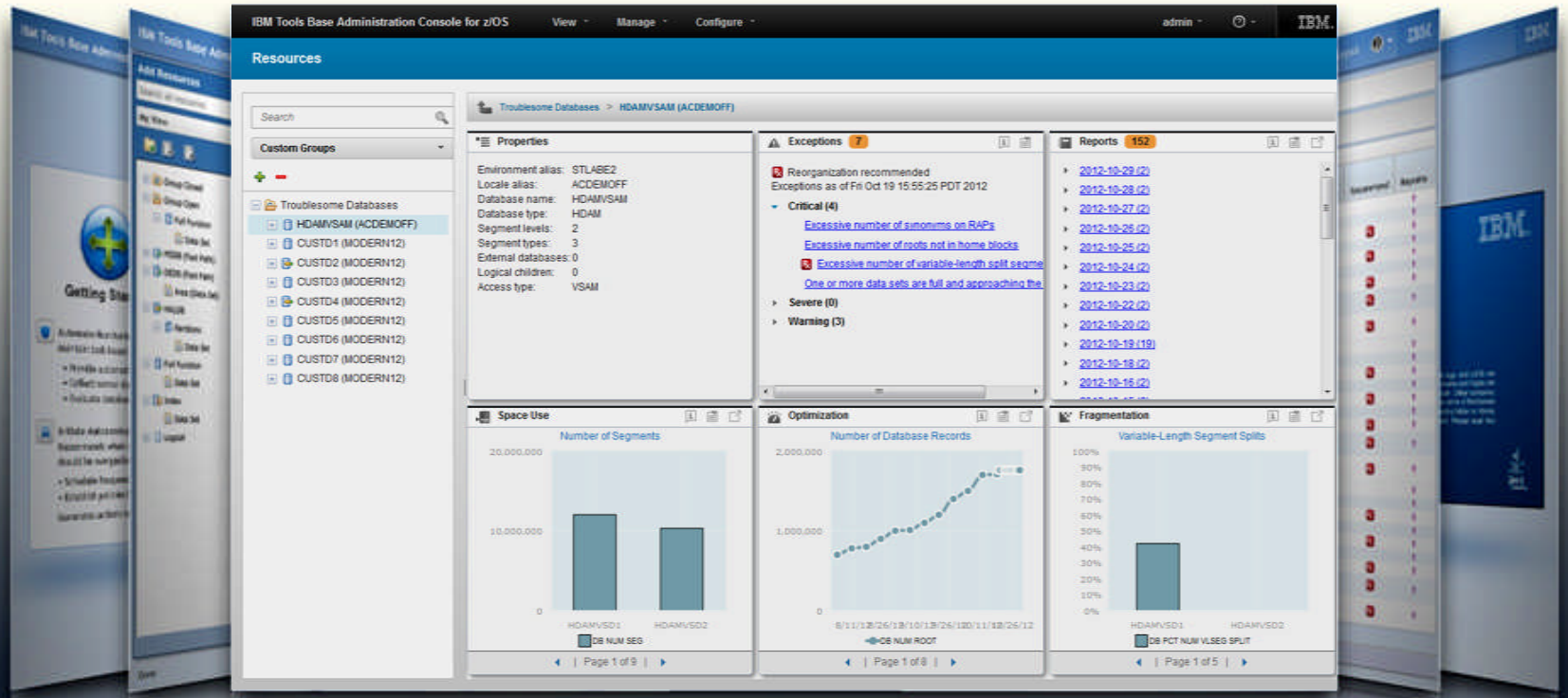
View the detailed exceptions via ISPF Browse

- Complete transparency so you can see exactly why a reorganization is being recommended, we'll even send you an e-mail or text message to notify you



IMS Administration Console

Changing the face of the platform

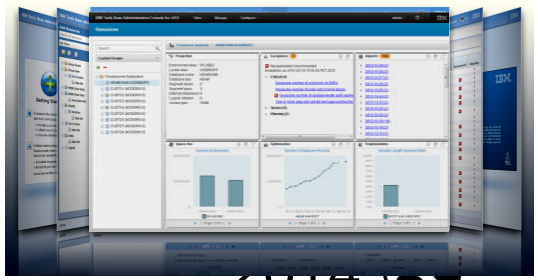


IMS Administration Console Goals

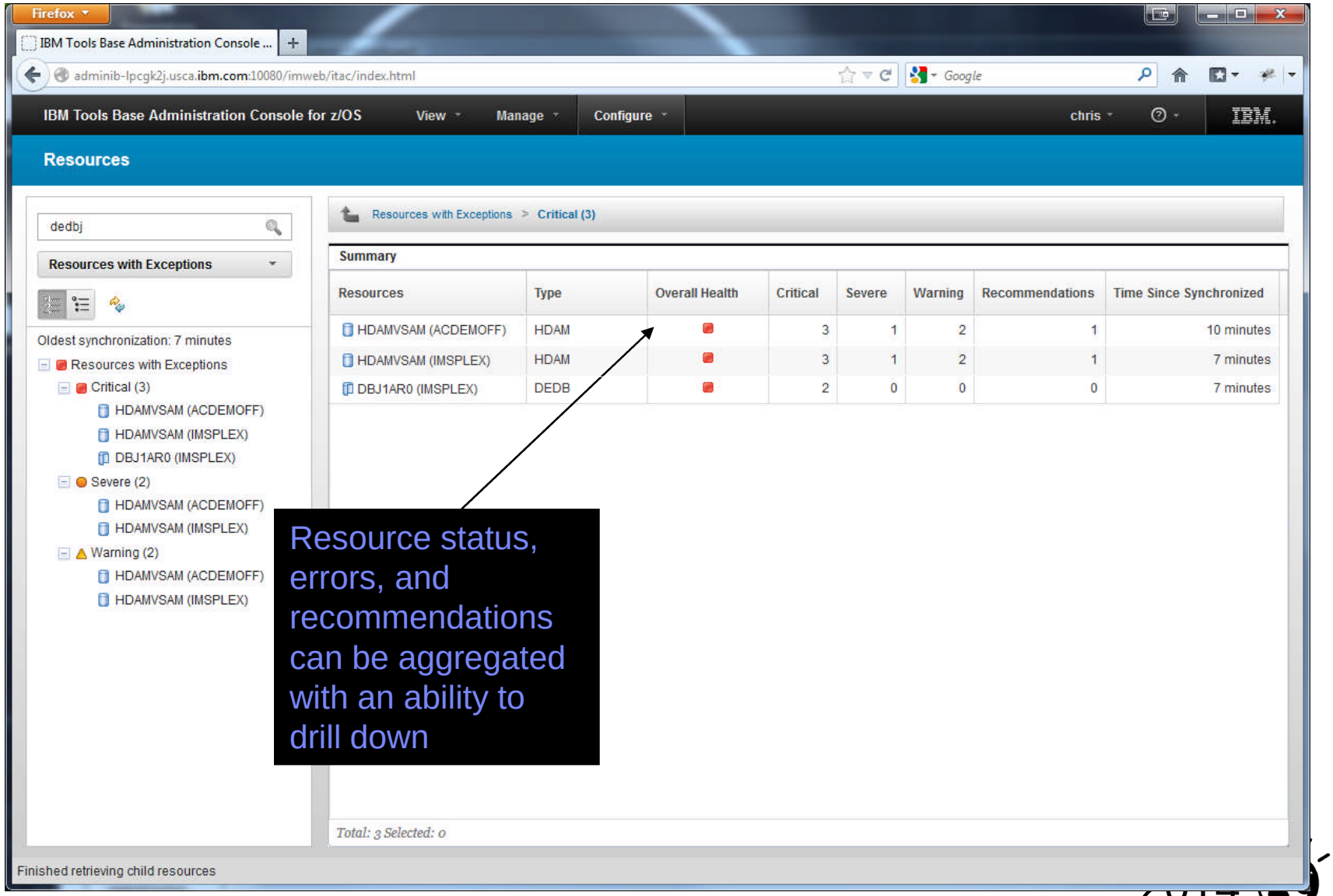
Modernization

- Provide a single holistic, easy-to-use interface to manage IMS systems and databases
  - Consolidate information from various tools to paint a more complete picture of IMS systems and databases
  - Leverage the latest web technologies for a richer user experience
  - Access from anywhere via the Internet using standard web browsers
  - Prepare the next generation of IMS DBAs and System Programmers through an integrated, context sensitive help system

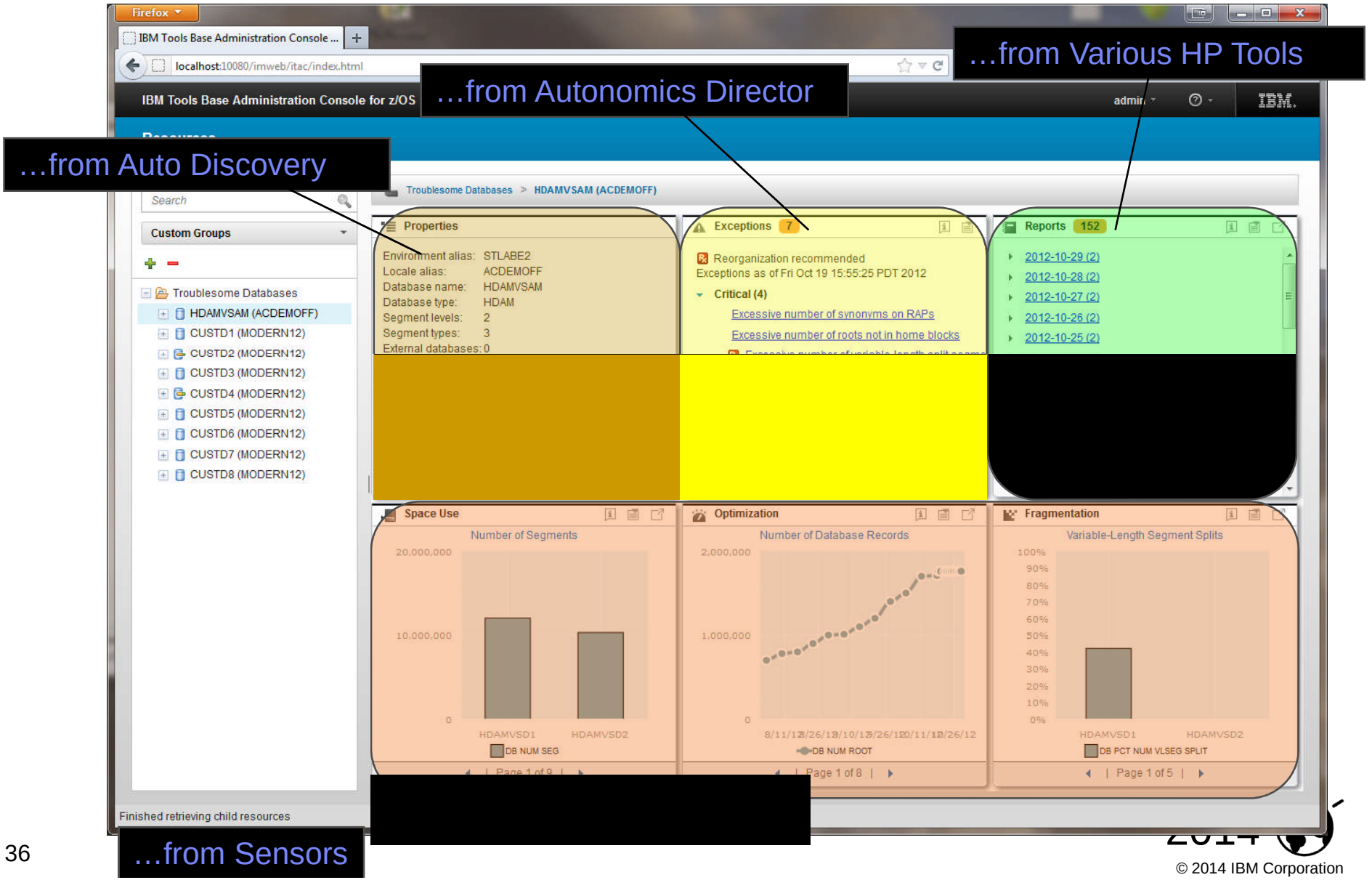
- Begin with integration of our Autonomics Solutions
  - …Extend integration to support all our IMS Tools



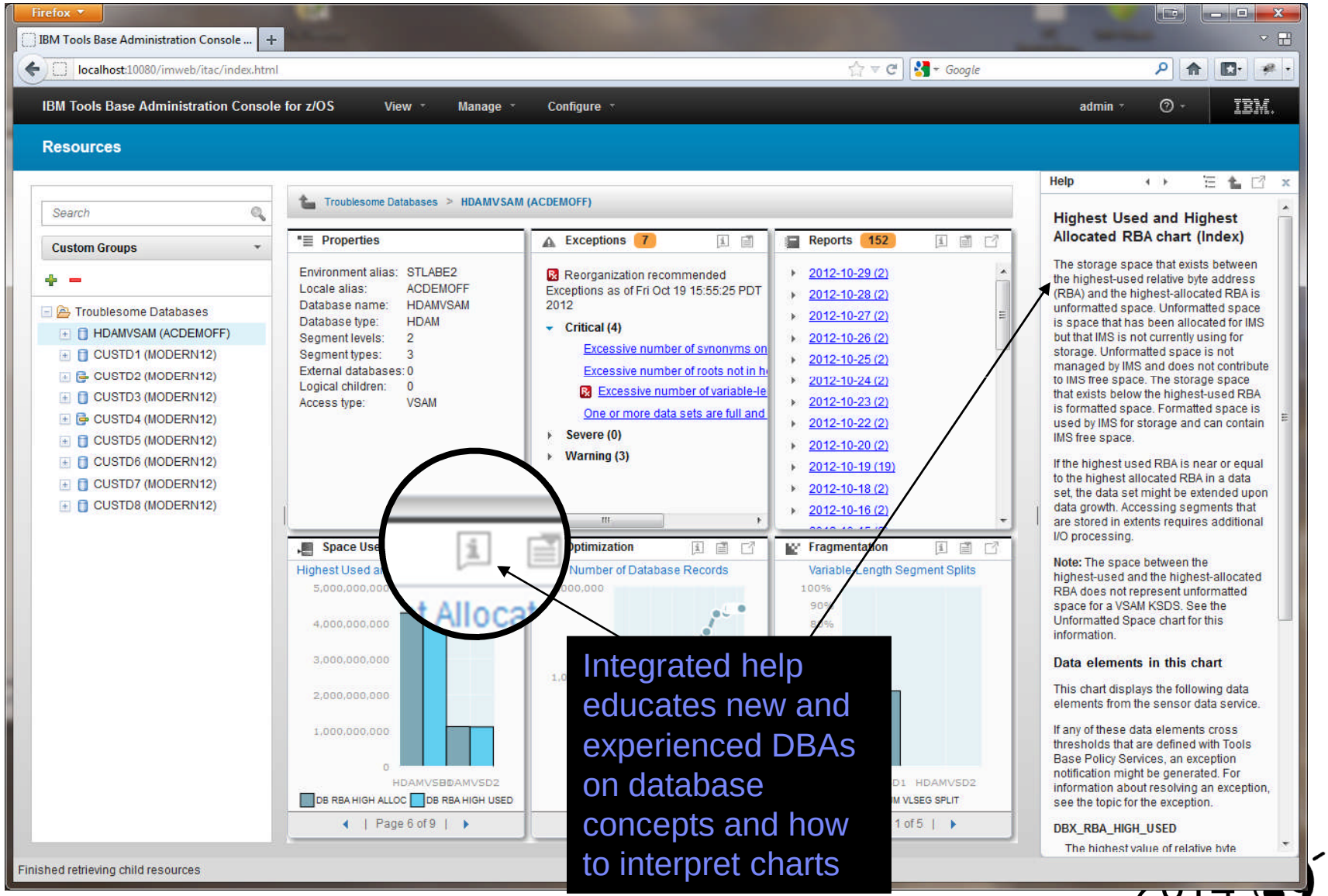
Drill down on Exceptions from an Enterprise-wide View



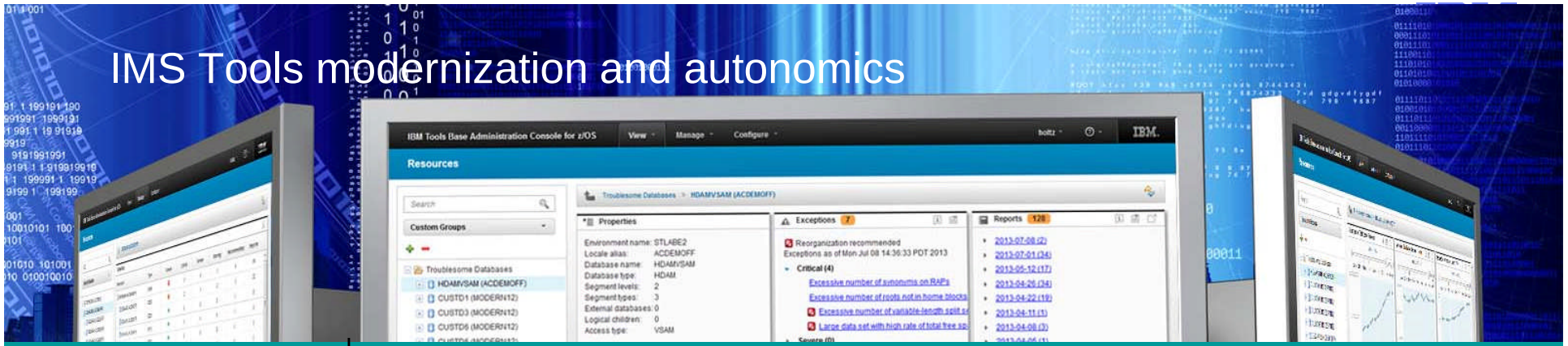
Holistic View of IMS Databases



Integrated Help Throughout



IMS Tools modernization and autonomics



IMS Database Solution Pack for z/OS

Autonomics
IMS Online Reorg Facility
IMS DB Reorganization Expert
- Unload, Load, Index Build, Prefix Resolution/Update
IMS HP Image Copy
IMS HP Pointer Checker
IMS Library Integrity Utilities

IMS Fast Path Solution Pack for z/OS

Autonomics
IMS HP Fast Path Utilities
IMS DB Repair Facility
IMS HP Image Copy
IMS Library Integrity Utilities

IMS Recovery Solution Pack for z/OS

IMS HP Image Copy
IMS Database Recovery Facility
IMS HP Change Accumulation
IMS Index Builder
IMS DRF Extended Functions

IMS Performance Solution Pack for z/OS

IMS Connect Extensions
IMS Performance Analyzer
IMS Problem Investigator

IMS Tools Base for z/OS

Data Base Administration	▪IMS Sequential Randomizer Generator
Utility Management	▪IMS Cloning Tool ▪IMS Database Control Suite
Backup and Recovery	▪IMS HP Image Copy ▪IMS DEDB Fast Recovery ▪IMS Recovery Expert V2
Performance Management	▪IMS Buffer Pool Analyzer ▪IBM Transaction Analysis Workbench ▪IMS Network Compression Facility

System
▪IMS Command Control Facility
▪IMS ETO Support
▪IMS HP Sysgen Tools
▪IMS Queue Control Facility
▪IMS Workload Router
TM
▪IMS Configuration Manager
▪IMS Sysplex Manager
▪Batch Terminal Simulator
▪Program Restart Facility

▪Guardium ITAP for IMS
▪IBM Infosphere Guardium Data Encryption for DB2 and IMS Databases

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