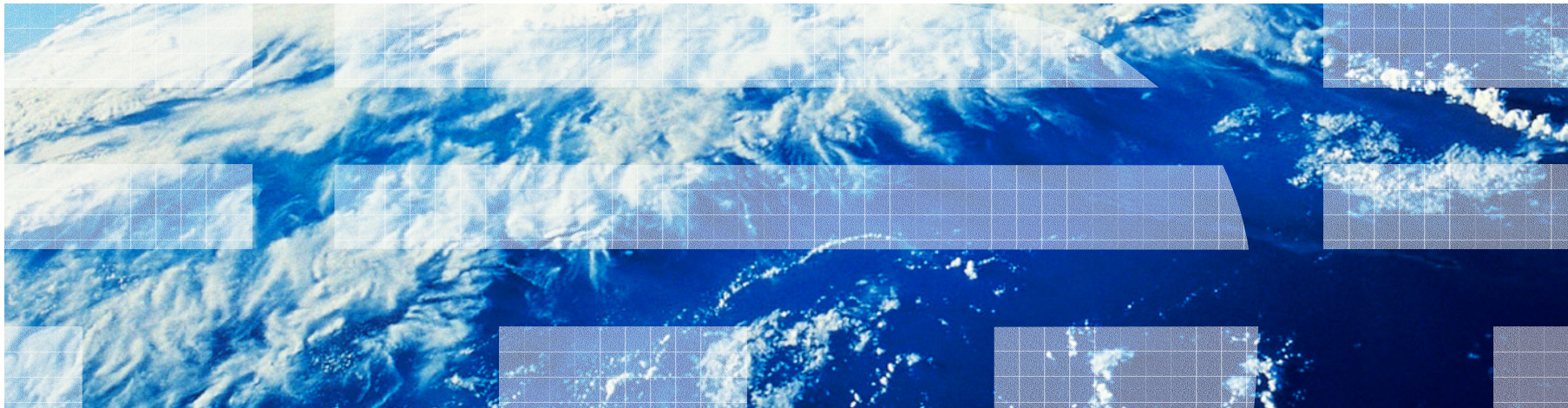


# Modern Eclipse based Development Environments for z/VSE



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DB2 Universal Database	Intelligent Miner	z/VSE
e-business logo*	Multiprise*	VisualAge*
Enterprise Storage Server	MQSeries*	VTAM*
HiperSockets	OS/390*	WebSphere*
	S/390*	xSeries
	SNAP/SHOT*	z/Architecture
		z/VM
		zSeries
		System z

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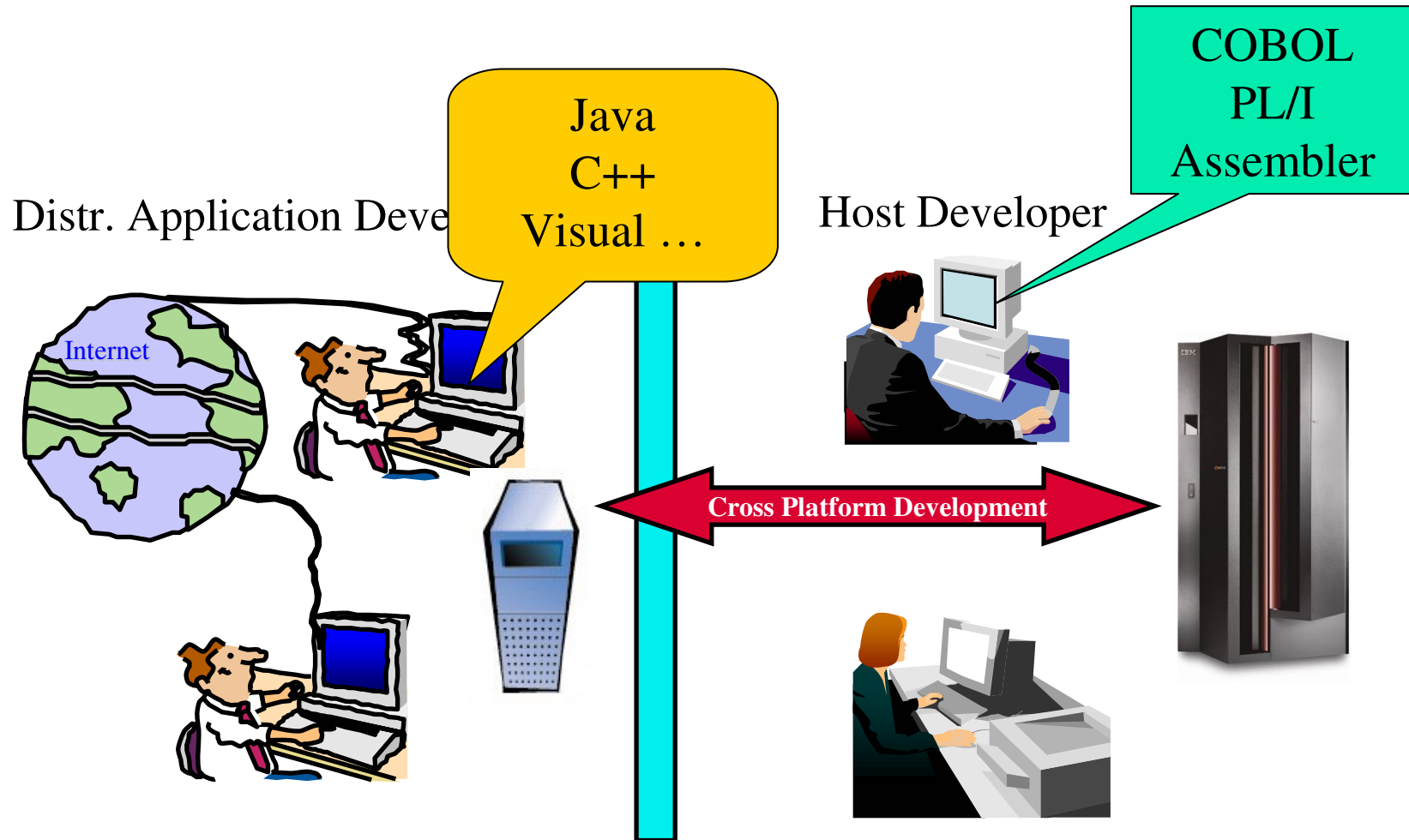
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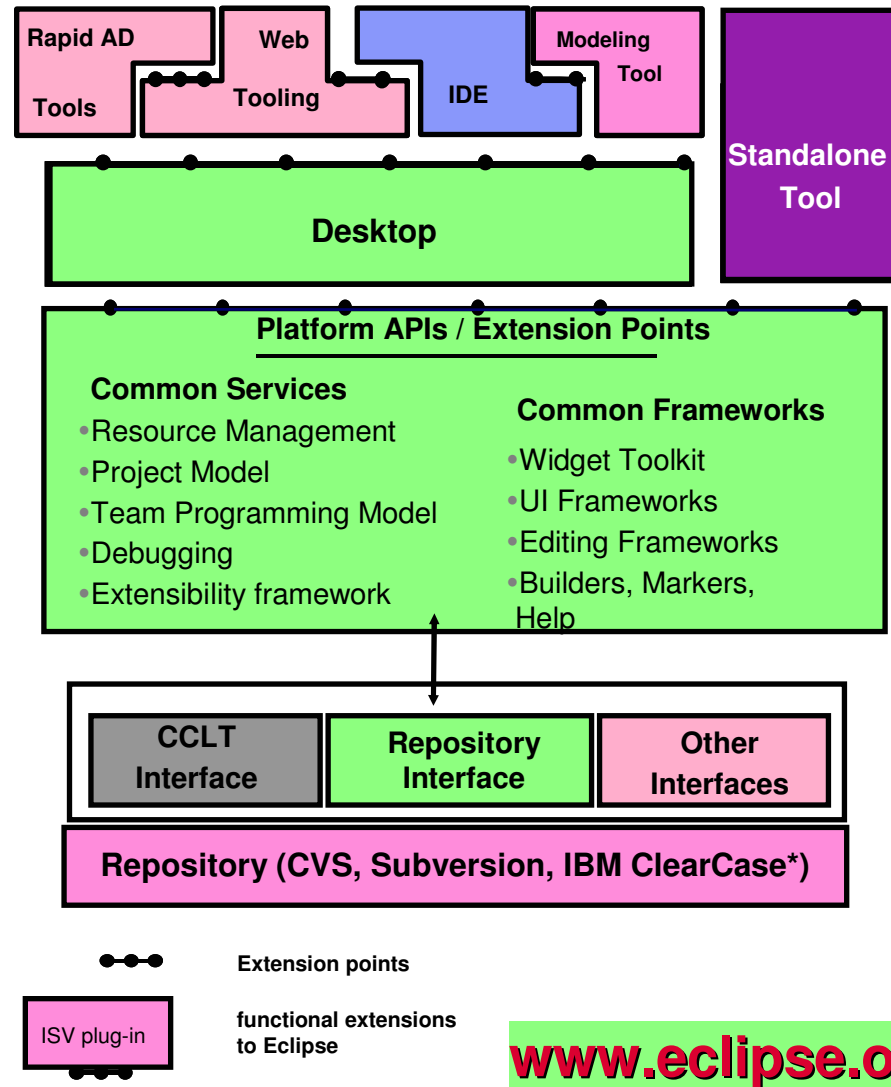
## Development objectives !!!

- Tools for managing existing z/VSE source code and changes
  - COBOL, ASM, PL/I, C, 4GL Languages
  - increased productivity for changes and new development
  - flexibility in versioning
  - effective group development control
  
- Develop for multiple platforms
  - common framework for the enterprise instead of multiple unique platform dependent tools
  - same basic tool set for open systems and mainframe
  
- Open source based technology
  - tools that students know from school and university communities
  - help new developers adapt to the mainframe

# 'Distributed' Development Landscape...



# Eclipse – the open Standard for application development

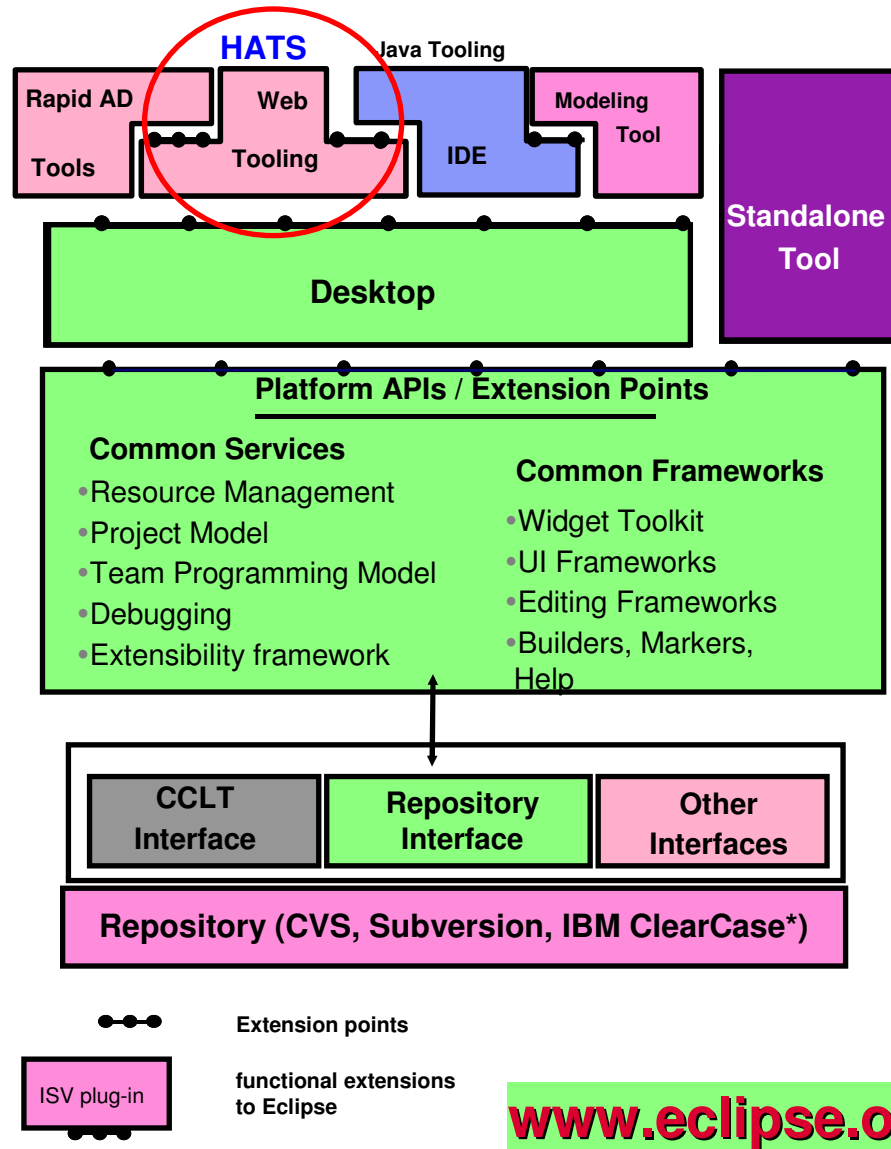


## What is Eclipse about:

- Open source development framework
  - with modern Editors
  - syntax help & check
  - semantic check
- Centralized source code maintenance
  - entire source code in central Repository
  - cross platform project administration
- Versioning software interface
  - CVS, Subversion, or IBM ClearCase
  - automatic Workgroup-control
    - i.e. development groups, system group
- Open for ISVs development Plug-Ins
  - **Integrated Development Environments (IDE)**
    - for System z (RDz)
    - for Java, COBOL, PL/I, ASM,C
  - Application analysis and optimization
    - Analyze the applications and workflows with graphical correlations
  - IBM HATS Development Plug-In
    - develop new front-ends to 3270 applications
  - IBM EGL development for z/VSE (RBD)
    - follow-on to Visual Age Generator



# Eclipse – the open Standard for application development



[www.eclipse.org](http://www.eclipse.org)

## What is Eclipse about:

- Open source development framework
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    - for Java, COBOL, PL/I, ASM,C
  - Application analysis and optimization
    - Analyze the applications and workflows with graphical correlations
  - **IBM HATS Development Plug-In**
    - develop new front-ends and GUIs to existing 3270 applications
  - IBM EGL development for z/VSE (RBD)
    - follow-on to Visual Age Generator

# Host Access Transformation Server (HATS)

- A Web-to-host integrator, HTML emulator ...
- rules-based transformation engine, application integration ...
- converts green screens to **graphical user interfaces in web applications**
- improves ease-of-use of host applications.

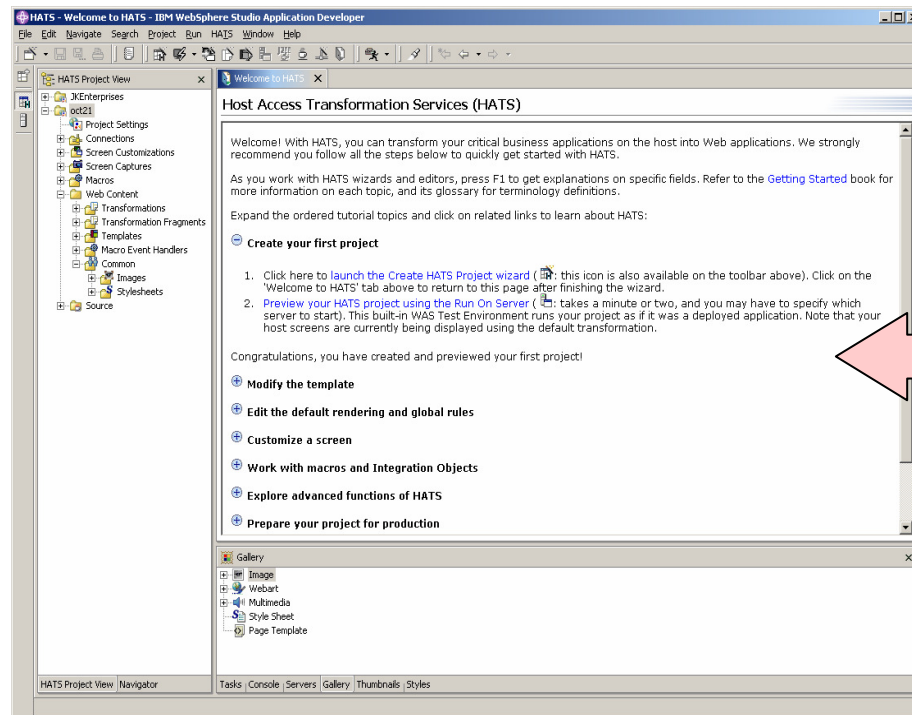
The image illustrates the HATS architecture. On the left, a terminal window shows the original host application's output, a text-based report with columns for part numbers and names. On the right, a web browser window shows the transformed web application. The web application has a modern graphical interface with a navigation menu, a table for the report data, a horizontal bar chart for inventory levels, a calendar for delivery schedules, and a table for current orders with photo buttons for each item.

**Benefit: Easily extend existing applications to the web**

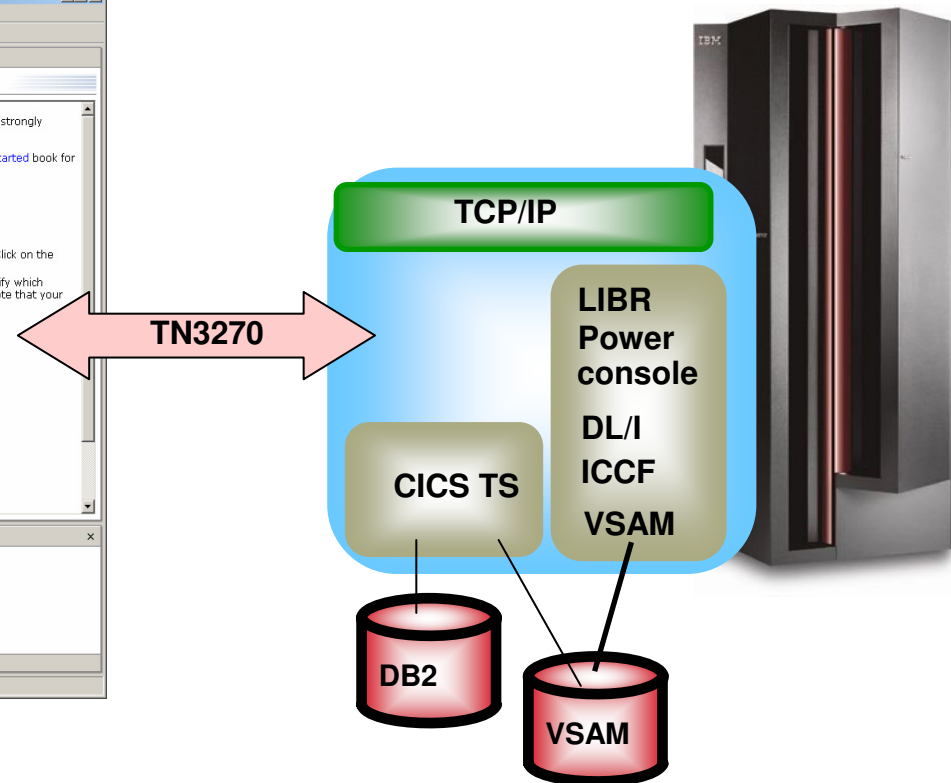
# Modernize Existing Applications with HATS

## (2) Integrate existing applications in Web applications – in Java

### Rational Application Development + HATS Plug-In

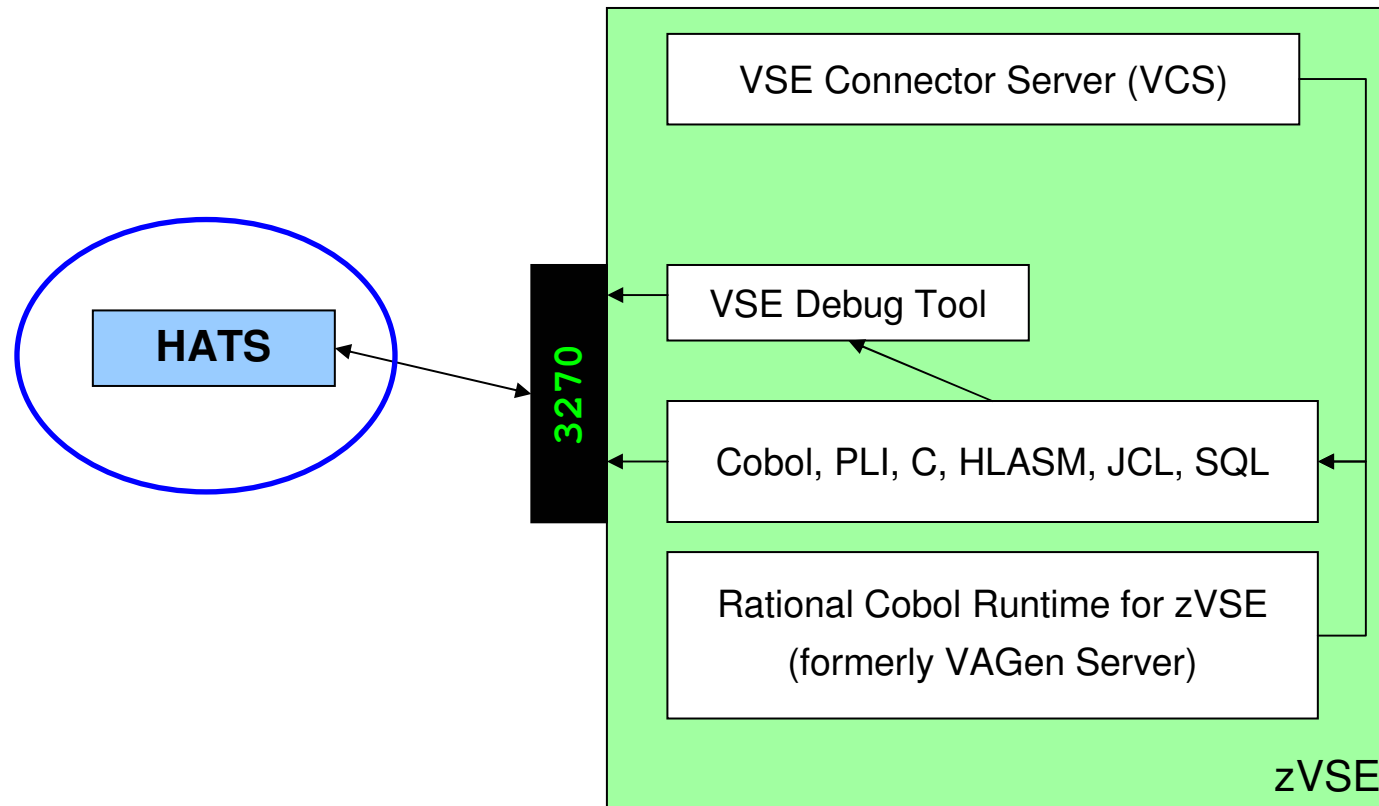


### z/VSE Server



- **Application-Development – in Java** (i.e. HATS Studio or Eclipse)
- The new application accesses unchanged VSE application and data
- the new application is a web application using internet technologies





# Web application for z/VSE applications with 3270 interface

## HATS Advantages:

- Combine / Integrate

```

HodConn:localhost:localhost:server1:ubsdemo.ear#1
SC4103      Check Entitlement by Customer number
           5/16/02  10:13:31

Support Center/400 library . . . . . DEMOBOX20

Type choices, press Enter.

Customer number . . . . .
Location code . . . . .
Support Center/400 problem number . . . . .
Associated problem . . . . .

F2=Search Customer database  F3=Exit  F6=Create profile  F10=Messages
F12=Cancel  F14=Inventory search  F20=Support services
    
```

```

HodConn:localhost:localhost:server1:ubsdemo.ear#5
200      Search Results

For a record, press a function key -or- type an Action Code and press Enter.
A=Address  B=Backup  C=C-list  D=Dept title  F=Feedback
I>Show Ids  J=JobResp (press)  K=Calendar  L=Local data  M=Update/Open
P=Phone  R=Reps-To-All  T=Te-list  U=Reps-Chain  V=View record

Columns 42 to 61 of 69
AREAA04 AREALL ASSIGNED ATLANTA ATLA00 AUSTIN BETHESDA BOCA BOULDER BURLINGOT
CHARLOTT CHICAGO CT DALA00 DALLAS DAYTON FISHKILL INSCA00 KP LEX LOTUS LOUW02
Name      Act  Tie-line EmpSt  Node  User ID  Mail
Carter-Willis, A. P. (Antoinette)  -  596-3739  Reg  IBMUSM25  ACARTERW  WEZA1
Willis Jr, Albert F. (Al)  -  799-7224  Reg  IBMUSM24  AFWILLIS  B-HAM
Willis, Al L.  -  293-2768  Mgr  IBMUSM08  ALW883  P524
Willis, Andre R. (Dre)  -  888-5081  Sup  IBMUSM22  AWILLIS  H07R1
Willis, Andy B.  -  419-1518  Reg  IBMUSM49  ANDYWILL  022D
Willis, Art *CONTRACTOR*  -  000-0000  Contr  IBMUSM38  AWILLIO  B676/C
Willis, Arthur W. (Wayne)  -  Reg  IBMUS  WILLISW  na

Command ===>
FLMHelp  F2=Set 2  F3=Exit  F4=Send note  F5=Reps-To-All  F6=Show dept/team
F7=Backward  F8=Forward  F9=Command  F10=Actions  F11=Dist list  F12=Cancel
    
```

```

09/23/2003 02:21 PM <DIR>  Wollites
11/28/2003 02:23 PM <DIR>  videos
01/05/2004 09:24 AM <DIR>  wslch
01/09/2004 10:40 AM <DIR>  WINDOOS
10/16/2003 09:26 AM <DIR>  win_jce_121
01/05/2004 04:42 PM <DIR>  wsd51
04/23/2003 05:21 AM <DIR>  wpdrive
01/09/2004 10:40 PM  14,496 Mpamin.log
           14 File(s)  4,175,691 bytes
           93 Dir(s)  22,888,353,792 bytes free

C:\Documents and Settings\Administrator\
    
```

The screenshot shows a web browser window titled "ubsdemo - Microsoft Internet Explorer" with the address "http://localhost:9083/". The page content includes:

- Market Update:** A table showing market data for Dow Jones (9959.71, 37.85), NASDAQ (1918.26, 13.61), S&P 500 (1062.24, 3.19), and 30 Yr Bond (5.191, 0.04).
- Data from 5250 Source:** A form for "Check Entitlement by Customer number" with fields for Customer number, Location code, Support Center/400 problem number, and Associated problem. It also includes a "Login" section with Username and Password fields.
- Data from 3270 Host:** A table with columns Name, Phone, Type, Node, User, and Mail. It lists several employees including Carter-Willis, Willis Jr, Willis, Willis, Willis, and Willis.
- Our Perspective:** A list of items such as "Municipal Market Commentary-12/01/03", "Basis Points-12/11/03", "On the Run-12/08/03", "As We See It-12/08/03", "Mary Farrell's Market View - 11/11/03", "Municipal Market in Perspective-11/03/03", and "Credit Market Relative Value (Summary Note) - 11/10/03".
- Results from VT Data Source:** A summary showing "Query Directory: c:\", "93 Dir(s) 22,888,353,792 bytes free", and "14 File(s) 4,175,691 bytes".





# Hawai'i State Judiciary

Hawai'i State Judiciary's Public Access to Court Information

Search Option #1 - Enter the full case ID below.

Case ID

Search

Search Option #2 - Search on a person or business' name.

Last or Business Name

First Name

Search

Search Option #3 - Choose from the selections below and enter the case number as indicated. (Suffix is optional)

Circuit

Oahu

Case Type

Civil

Year

Century

2000's

Case Number

Suffix

01

Search

- Civil
- Circuit Court Criminal
- District Court Regular Civil Claim
- District Court Small Civil Claim
- District Court Temporary Restraining Order
- Equity
- Family Court Appeal
- Family Court Criminal
- Divorce
- Family Court Domestic Abuse
- Family Court Miscellaneous
- Guardianship
- Land (after 1997)
- LAW - initiated prior to statehood w/ activity after 1984
- Mechanic's and Materialman's Lien
- Probate
- Small Estate (before 1995)
- Small Guardianship (before 1995)
- Special Proceedings
- Special Prisoner Proceedings

Print

Help

Exit



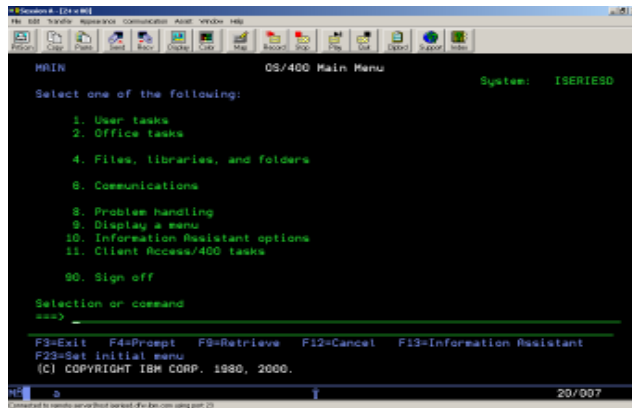
Taskbar showing various application icons: Pr..., 67..., 8..., Sa..., Pa..., C..., Ca..., PT..., Se..., C..., jy..., zill..., Ho...

System tray area showing: 99% battery, network status, volume control, and the time 3:16 PM.

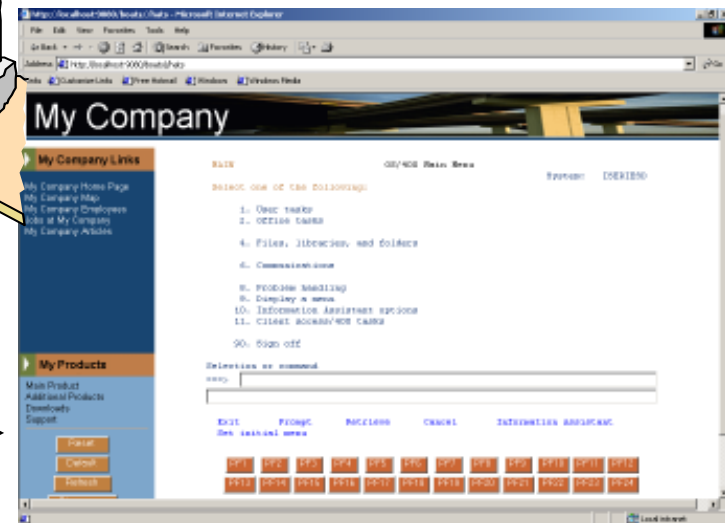
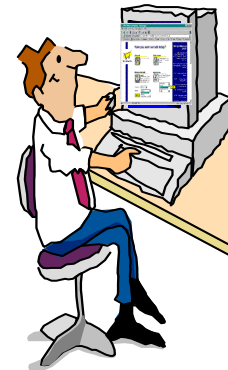
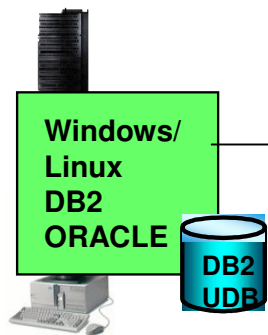


# Application Integration with Host Access Transformation Services (HATS)

- Not invasive
- No software download to the client
- Web Services on the fly
- Integration with distributed applications



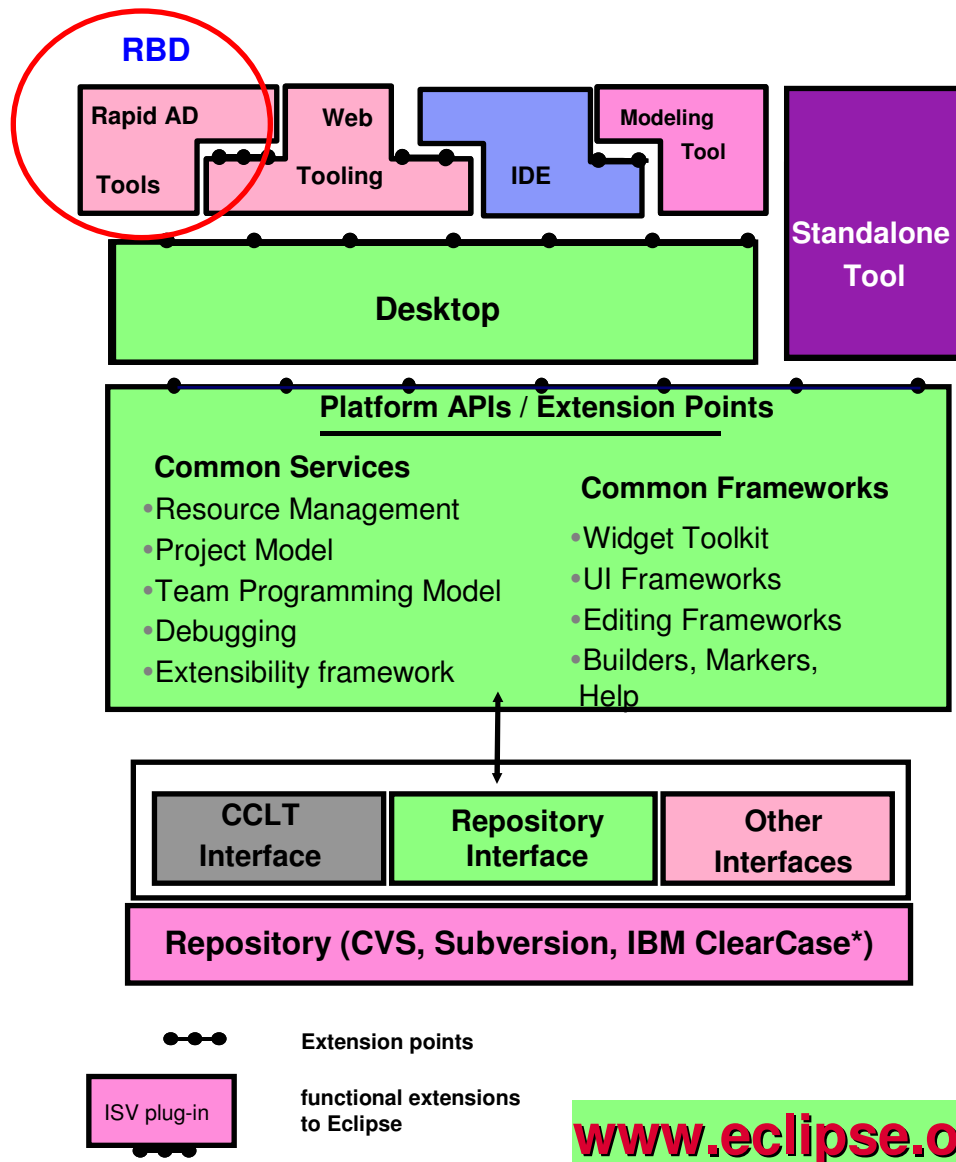
3270 or 5250 data stream



Screen transformation rules running on WebSphere Application Server

HTML in a Browser

# Eclipse – the open Standard for application development



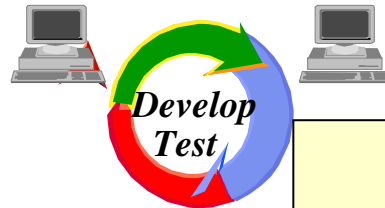
[www.eclipse.org](http://www.eclipse.org)

## What is Eclipse about:

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  - syntax help & check
  - semantic check
- Centralized source code maintenance
  - entire source code in central Repository
  - cross platform project administration
- Versioning software interface
  - CVS, Subversion, or IBM ClearCase
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  - **Integrated Development Environments (IDE)**
    - for System z (RDz)
    - for Java, COBOL, PL/I, ASM,C
  - Application analysis and optimization
    - Analyze the applications and workflows with graphical correlations
  - IBM HATS Development Plug-In
    - develop new front-ends to 3270 applications
  - **IBM EGL development for z/VSE (RBD)**
    - **EGL Plug-In for zVSE**
    - **follow-on to Visual Age Generator**

## (2) Cross Platform Solution development Approach with 4GL Language (EGL)

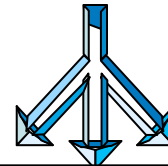
**Rapid  
Development**



**IBM 4GL history:**  
CSP (~1981) -> VAGen (~ 1994) -> EGL (~2003)  
Migration-Options available ...

**Generation**

*Generate*



GUI, Java, HTML, C++, COBOL, PL/I

z/VSE(CICS, Batch)

**Execution**

*Execute*



AIX



Windows



HP/UX



Solaris



Linux

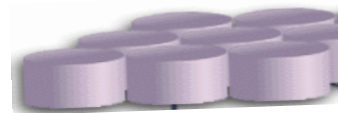


OS/400



z/OS, (CICS, IMS, Batch)

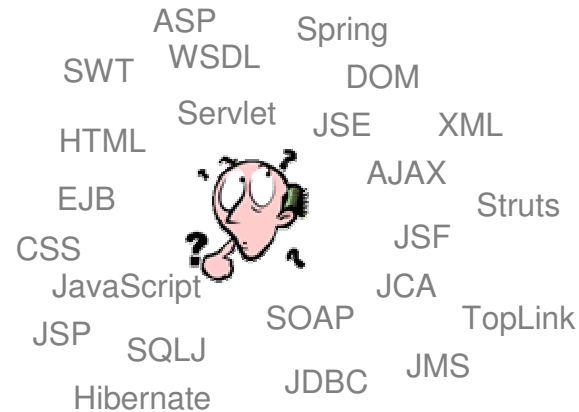
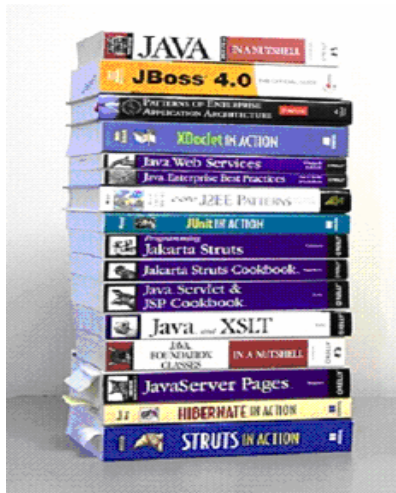
- Multiple platforms
- Client /Server Applications
- Java applets/servlets or standalone
- Multiple database/file support apps



DB2 UDB VSAM ODBC  
Oracle DLI, IMS/DB

# Why EGL?

## Because building applications today is not easy



- Learn and master myriads of
  - programming languages and semantics
  - middleware interfaces
  - programming paradigms and styles
  - frameworks and libraries
- Constantly emerging new technologies
- Code at a more abstract and simpler level
- Easy to learn, modern and comprehensive language
- Keeps up with emerging technologies
- Inter-operates seamlessly with legacy



# The power of the Language

## *Simple and familiar.... yet robust and complete*



- Rich data types
  - Primitive
    - Simple (int, string, boolean, etc.)
    - Complex (any, arrays, dynamic arrays, dictionaries, array dictionaries, etc.)
  - User defined Data Parts
- Keywords
  - Case, if-then-else, while, for loop, for loop cycling through a database result set, etc.
- High power language capabilities
  - Automated Casting (e.g. using AS operator)
  - Mixing data types in assignments and expressions
  - Exception handling
- Rich libraries of built-in functions
  - Math, string, date/time, system, i5/OS objects APIs
- Robust integration with existing investment or access to low level APIs
  - Call RPG, COBOL, C, etc.
  - Full Java interoperability
    - Invoke Java from EGL (map Java classes with EGL External Types)
    - Invoke EGL from Java

```
hello.egl x
1 // Hello World basic program
2
3 program hello type BasicProgram
4
5 // Data Declarations
6 name string = "World";
7
8 function main()
9     writeStdOut("Hello " +name);
10 end
11
12 end
13
```

# The power of Abstractions and Declarative



## ■ Data access:

- “Records” provide access to:
  - SQL, Indexed, Relative, Serial, DL/I, Service data, Message Queues
- Common Verbs for data access (**Get, Add, Replace, Delete**).
- Allows complete access to SQL statement if needed.
- Common Error Handling.

```
*sampleProgram.egl x
function allLoans()
  loans LoanRec[];
  get loans;
end
```

## ■ Remote Invocation

- Call COBOL, RPG, C, Java.
- Linkage information separated from code.
- Data mapping, protocol invocation all resolved at runtime, NO code necessary

```
*sampleProgram.egl x
function callHelloWorldOniSeries()
  salutation char(30);
  call helloworld salutation;
end
```

## ■ User Interface:

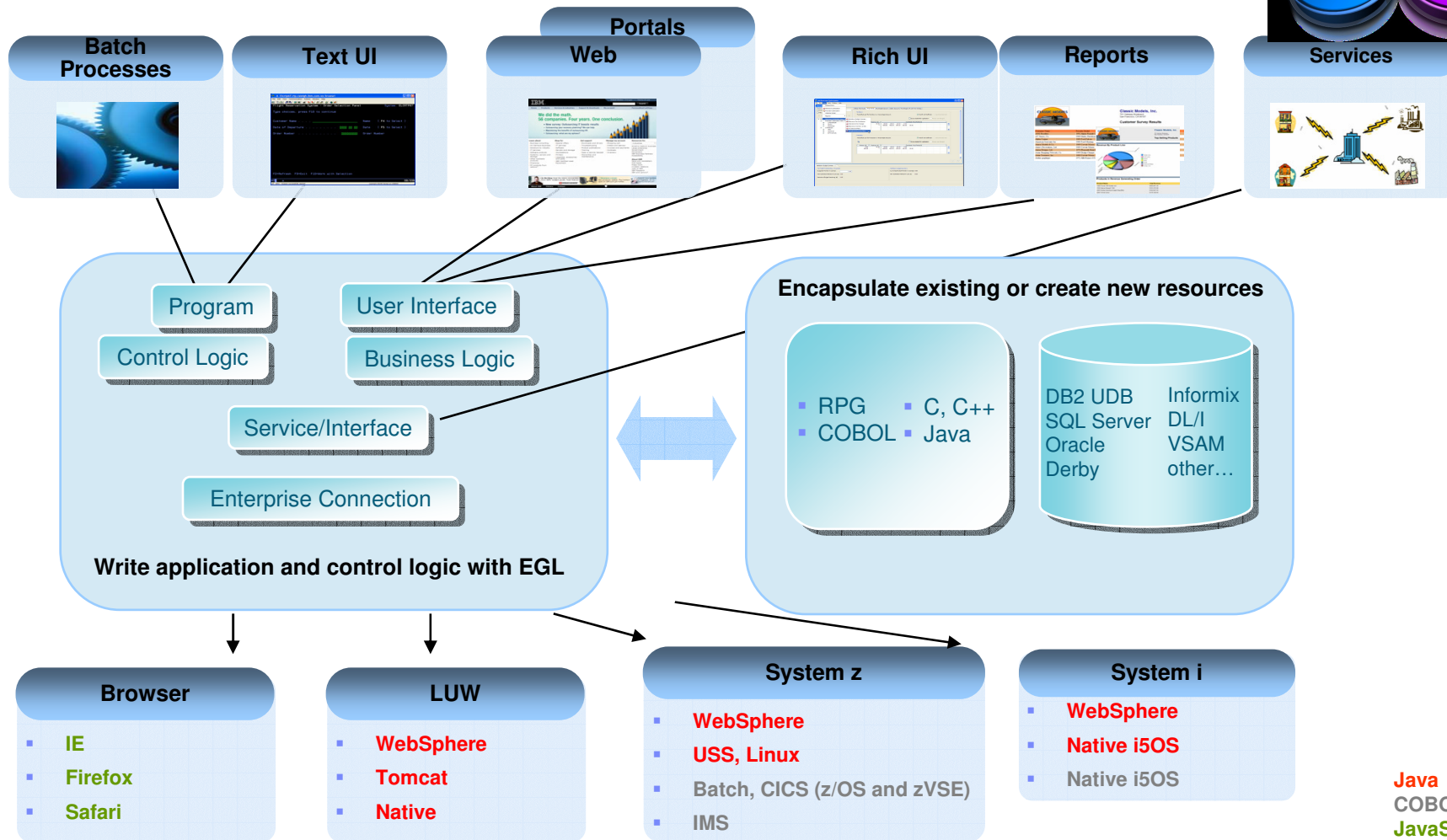
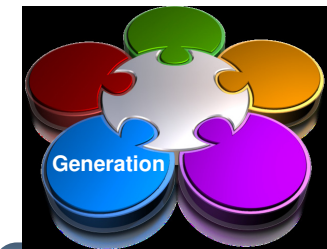
- EGL “handlers” hide complexities of
  - Web (JSF) UI
  - Reports (BIRT)
  - Portlets
  - Rich Web (Ajax)

```
*sampleProgram.egl x
DataItem SSN Password char(9) {
  validatorFunction = "ValidateSSN()",
  displayUse = secret,
  pattern = "XXX-XX-XXXX",
  displayName = "Social Security No",
  inputRequired = yes
end
```

## Validation/Editing Rules:

- Via properties in “Data Items.
- Define formatting & validation rules in a common place.
- Reuse data items for Records, screens, web pages, reports.

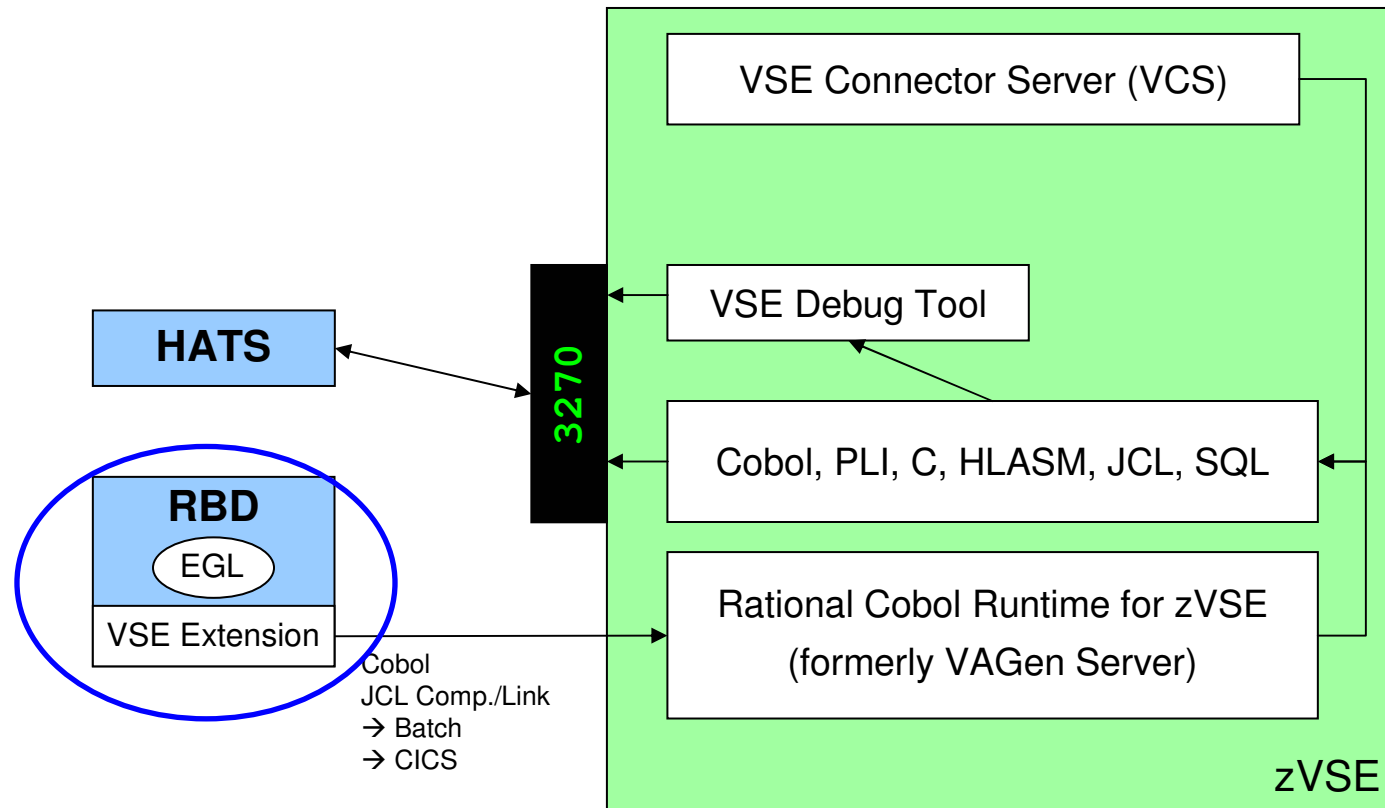
# Respond to Broadest Application Needs



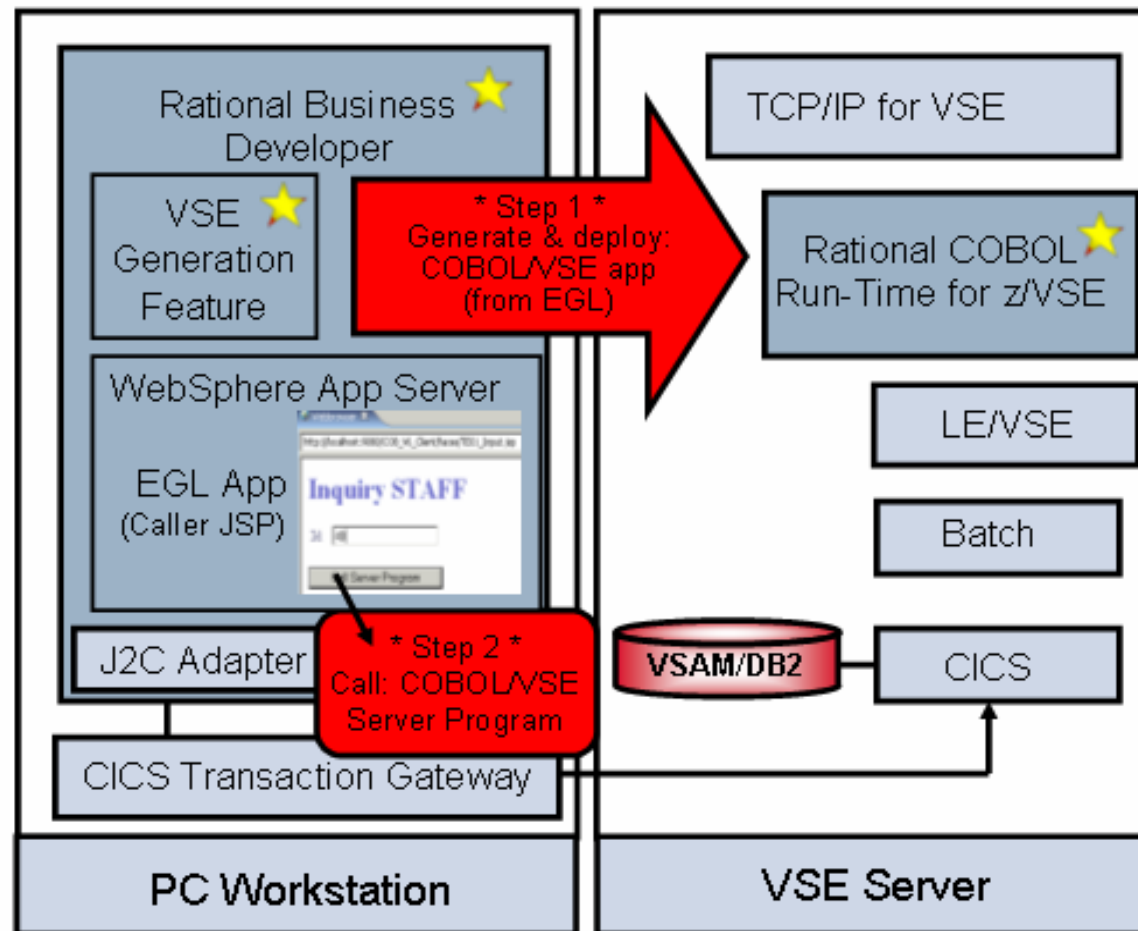
## Modern development environment for z/VSE with RBD - IBM Rational Business Developer

- Since December 2008, continued 4GL support for z/VSE is available:
  1. z/VSE host component **IBM Rational COBOL Runtime for z/VSE (V7.5)**  
(replaces the Visual Age Generator Server for VSE)
  2. PC tool for development: **IBM Rational Business Developer (RBD V7.5.1)**  
and the associated components
    - **IBM Rational Business Developer Extension for VSE V7.5.1**
      - COBOL Code generation for z/VSE
      - Generation for System z (z/OS)
- J2C-Tools (Java EE Connector)
- **IBM CICS Transaction Gateway (optional – for CICS access only)**

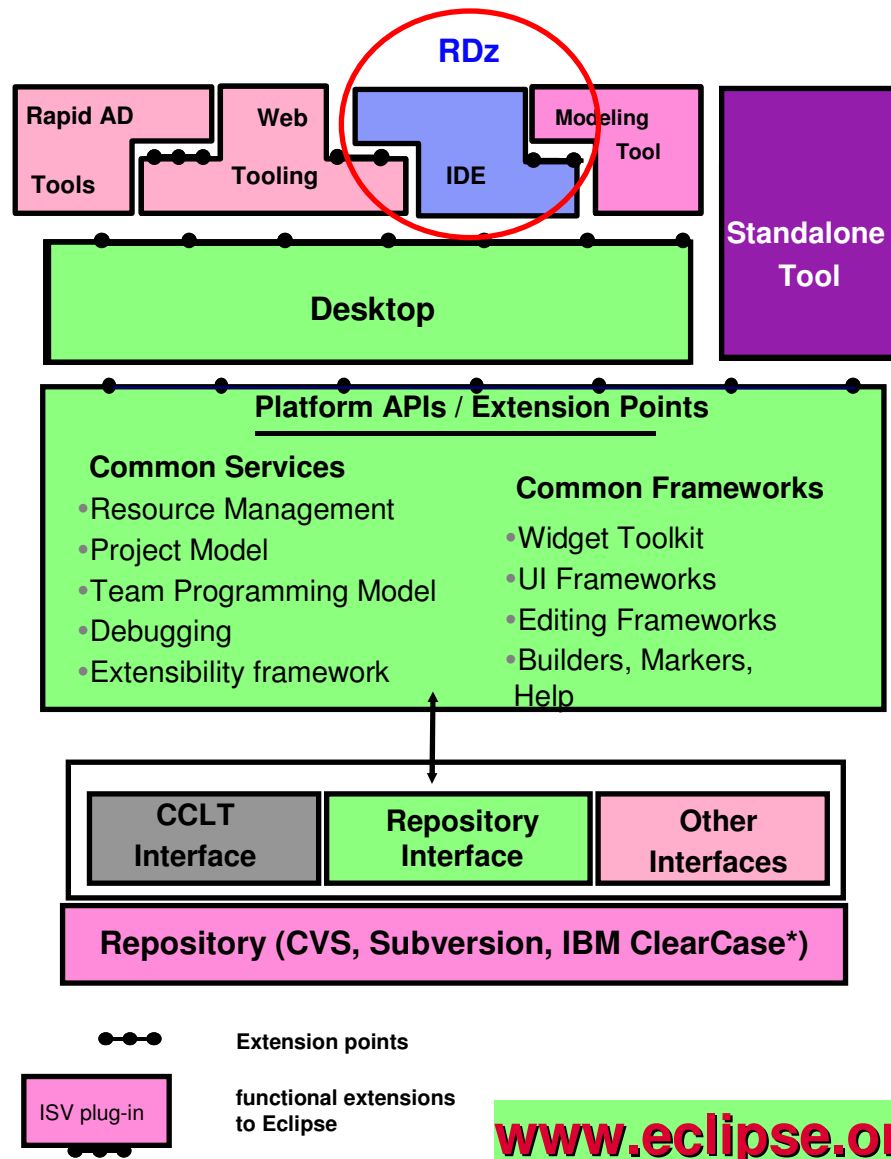




# RBD – functional view (Generate COBOL applications on z/VSE using EGL )



# Eclipse – the open Standard for application development



[www.eclipse.org](http://www.eclipse.org)

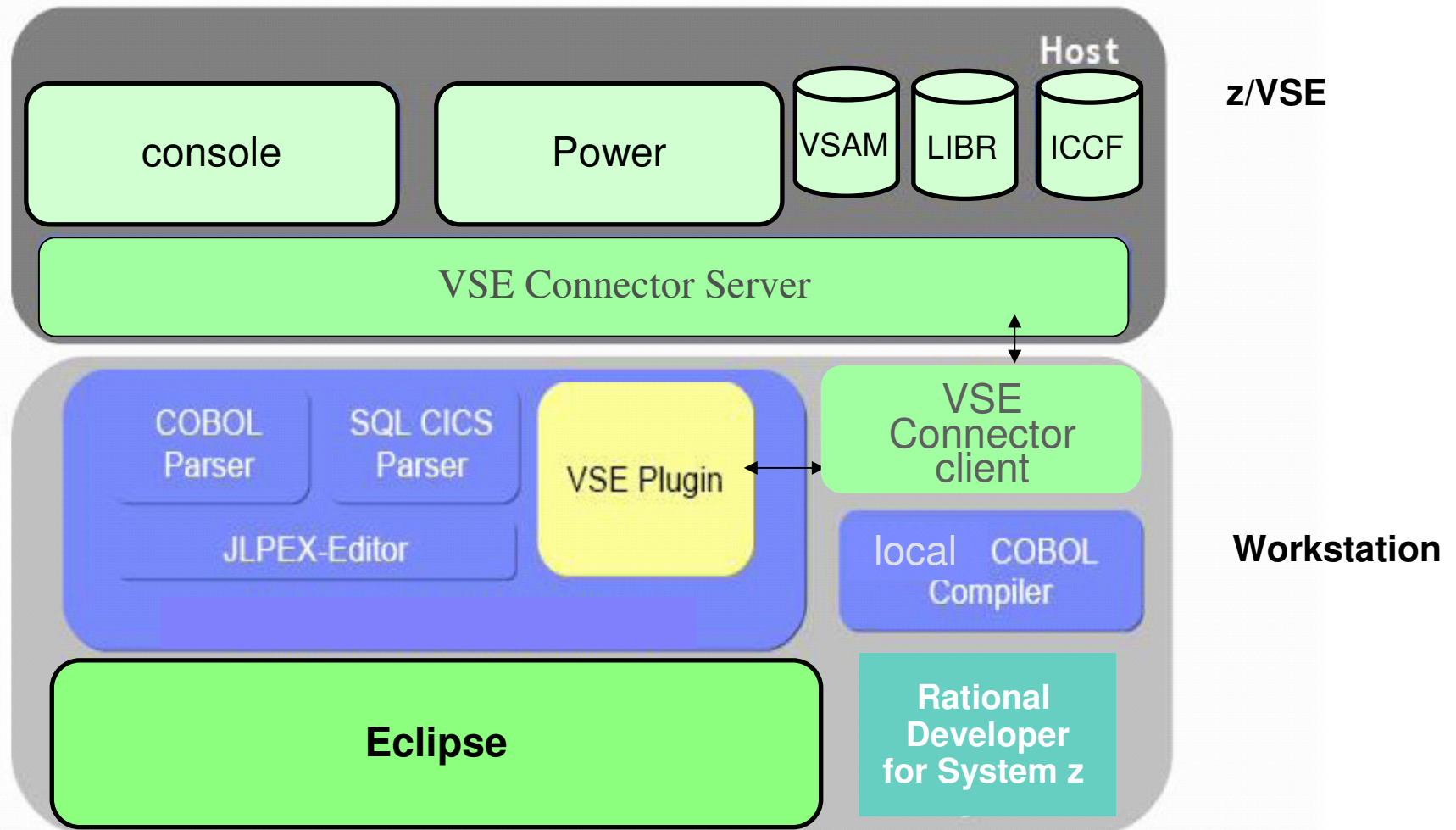
## What is Eclipse about:

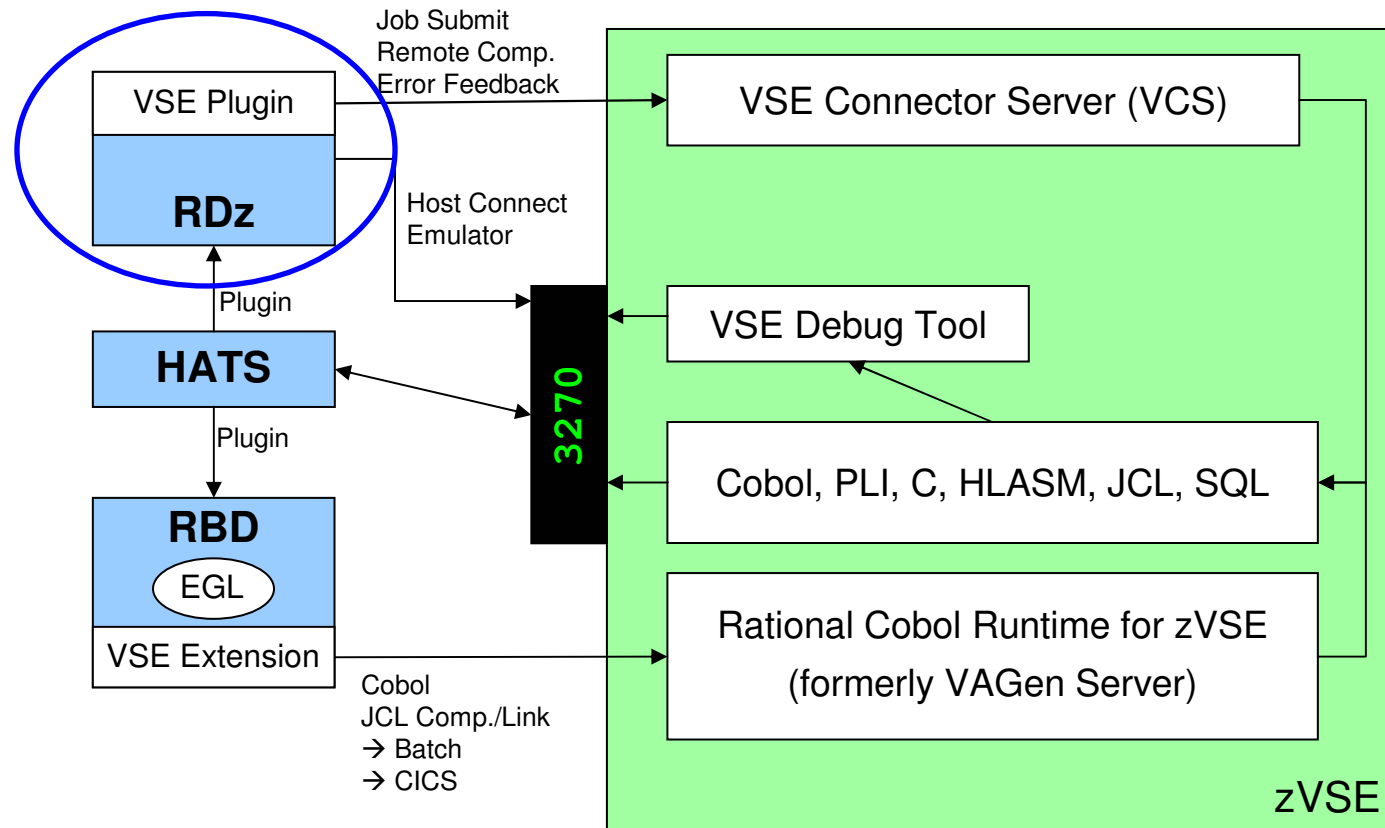
- Open source development framework
  - with modern Editors
  - syntax help & check
  - semantic check
- Centralized source code maintenance
  - entire source code in central Repository
  - cross platform project administration
- Versioning software interface
  - CVS, Subversion, or IBM ClearCase
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- Open for ISVs development Plug-Ins
  - **Integrated Development Environments (IDE)**
    - for System z (RDz)
    - for Java, COBOL, PL/I, ASM,C
  - **Application analysis and optimization**
    - RTW – Rational Trasformation Workbench
    - Analyze applications with graphical correlations
  - IBM HATS Development Plug-In
    - develop new front-ends to 3270 apps.
  - **IBM EGL development for z/VSE (RBD)**
    - follow-on to Visual Age Generator

# The IBM Development environment for the enterprise

## Rational Developer for System z (RDz 7.5)

### with z/VSE Development Plug-in for RDz 7.5







## RDz functions for z/VSE and z/OS development

- Enhanced Eclipse tools with mainframe development functions
  - special editor functions for mainframe languages
  - local COBOL compiler
  - support for COBOL, ASM, PL/I, C
  - editor for CICS BMS maps
  - support for SQL generation
  - functions for remote processing and mainframe deployment
  
- Integrated test environment
  - full functional test within the development environment
  - debug possibility via z/VSE emulation window

# Rational Developer (RDz) in z/VSE perspective

The screenshot shows the IBM Rational Developer (RDz) interface for z/VSE. The main editor window (4. Editor) displays COBOL code for a program named PRINTAPP. The code includes sections for Identification, Data, Working-Storage, Linkage, and Procedure Division. Annotations 1 through 6 highlight specific parts of the interface:

- 1. Perspective:** Points to the top menu bar and toolbar.
- 2. View:** Points to the VSE System View tree on the right side.
- 3. Projects:** Points to the z/OS Projects tree on the left side.
- 4. Editor:** Points to the central code editor window.
- 5. Outline View:** Points to the Outline view at the bottom left, showing a hierarchical view of the program structure.
- 6. VSE Console:** Points to the VSE Console window at the bottom, displaying a MAP (Memory Address Page) table.

The VSE Console window shows the following MAP table:

AR	0015	SPACE	AREA	V-SIZE	GETVIS	V-ADDR	UNUSED	NAME
AR	0015	S	SUP	716K		0		\$\$A\$SUPI
AR	0015	S	SVA-24	1888K	1748K	B3000	768K	
AR	0015	0	BG V	1280K	4864K	500000	45056K	
AR	0015	1	F1 V	1024K	4096K	500000	OK	POWSTART
AR	0015	2	F2 V	2048K	49152K	500000	OK	CICSICCF
AR	0015	3	F3 V	608K	14760K	500000	OK	VTAMSTRI
AR	0015	4	F4 V	2048K	18432K	500000	OK	
AR	0015	5	F5 V	768K	256K	500000	OK	
AR	0015	6	F6 V	256K	256K	500000	OK	
AR	0015	7	F7 V	1024K	19456K	500000	OK	TCPIP00
AR	0015	8	F8 V	2048K	49152K	500000	OK	
AR	0015	9	F9 V	256K	256K	500000	OK	
AR	0015	A	FA V	256K	256K	500000	OK	
AR	0015	B	FB V	256K	256K	500000	OK	SECSERV
AR	0015	S	SVA-31	7588K	6748K	3700000		

# Rational Developer (RDz) in z/VSE perspective

The screenshot displays the IBM Rational Developer (RDz) interface for z/VSE. The main window shows a terminal session with the following text:

```

    IESADMS01          VSE/ESA ONLINE
    5609-ZV4 and Other Materials (C) Copyright IBM Corp. 2005 and other dates

    ++          vv  vv  sssss  EEEEE
    ++          vv  vv  sssssss  EEEEE
    zzzzzz      ++  vv  vv  sssss  EE
    zzzzzz      ++  vv  vv  sssss  EEEEE
    zz          ++  vv  vv  sssss  EEEEE
    zz          ++  vv  vv  sssss  EE
    zzzzzz      ++  vv  vv  sssss  EEEEE
    zzzzzz      ++  vv  vv  sssss  EEEEE
    
```

Below the terminal, a control panel includes function keys (PF1-PF12), Enter, Clear, PA1, PA2, Attn, SysReq, NewLine, and NextPad. The VSE Console window at the bottom displays a table of resources:

MAP	AR 0015	SPACE	AREA	V-SIZE	GETVIS	V-ADDR	UNUSED	NAME
	AR 0015	S	SUP	716K		0		\$\$\$SUPI
	AR 0015	S	SVA-24	1888K	1748K	B3000	768K	
	AR 0015	0	BG V	1280K	4864K	500000	45056K	
	AR 0015	1	F1 V	1024K	4096K	500000	0K	POVSTART
	AR 0015	2	F2 V	2048K	49152K	500000	0K	CICSICCF
	AR 0015	3	F3 V	600K	14760K	500000	0K	VTAMSTR
	AR 0015	4	F4 V	2048K	18432K	500000	0K	
	AR 0015	5	F5 V	768K	256K	500000	0K	
	AR 0015	6	F6 V	256K	256K	500000	0K	
	AR 0015	7	F7 V	1024K	19456K	500000	0K	TCPIP00
	AR 0015	8	F8 V	2048K	49152K	500000	0K	
	AR 0015	9	F9 V	256K	256K	500000	0K	
	AR 0015	A	FA V	256K	256K	500000	0K	
	AR 0015	B	FB V	256K	256K	500000	0K	SECSERV
	AR 0015	S	SVA-31	7588K	6748K	3700000		

Callouts in the image identify the following components:

- 1.Perspective**: The overall RDz window.
- 2.View**: The VSE System View tree on the right.
- 3.Projects**: The z/OS Projects tree on the left.
- 4.Outline View**: The Outline and Properties windows.
- 5.VSE Terminal**: The main terminal window showing the VSE/ESA prompt.
- 6.VSE Console**: The VSE Console window showing resource usage.
- 7.VSE Terminal**: The terminal window (repeated callout).

## ■ Develop a z/VSE project

The screenshot displays the VSE - DEMOVSE.hce application interface. The main window shows a terminal-like display with the following text:

```

IESADM01          VSE/ESA ONLINE
5609-2V3 and Other Materials (C) Copyright IBM Corp. 2004 and other dates

          ++
          ++  VV  VV  SSSSS  EEEEEEE
          ++  VV  VV  SSSSSSS  EEEEEEE
          ++  VV  VV  SS          EE
          ++  VV  VV  SSSSSS  EEEEE
          ++  VV  VV  SSSSSS  EEEEE
          ++  VV  VV          SS  EE
          ++  VVV  SSSSSS  EEEEEEE
          ++  VV  SSSSS  EEEEEEE

Your terminal is A001 and its name in the network is D1080001
Today is 01/26/2007 To sign on to DEBCCICS -- enter your:

USER-ID..... =          The name by which the system knows you.
PASSWORD.....          Your personal access code.

PF1=HELP      2=TUTORIAL      4=REMOTE APPLICATIONS
                          10=NEW PASSWORD
USE ONLY THE ENTER KEY OR ONE OF THE KEYS LISTED ABOVE.
    
```

A 'New' menu is open, showing options for 'MVS Project...' and 'VSE Project'. The right sidebar shows a tree view of the VSE system components, including 'VSE SYSTEM', 'DEMOVSE', 'Librarian', 'Power', 'Reader', 'List', 'Punch', 'Transmit', 'VSAM', 'VSAM.MASTE', 'DB2.USER.CA', 'VSESP.USER.', '#VSAM.#CIC', and 'ICCF'. The bottom of the window features a taskbar with various application icons and system status information, including the date and time (4:29 PM Friday 1/26/2007).



## ■ COBOL Syntax checking and highlighting

The screenshot shows the VSE IDE interface with the following components:

- File Explorer:** Shows a project structure with folders like .TmpVseRemote, DEMOVSE, build, BuildOutput, jcl, .project, and files CEEIGZCT.cbl and IGZTMATH.cbl.
- Code Editor:** Displays COBOL code for IGZTMATH.cbl. Line 40 is highlighted in red, indicating a syntax error. The code includes:
 

```

                02 Condition-Token-Value.          00027000
                COPY CEEIGZCT.                  00028000
                03 Case-1-Condition-ID.         00029000
                04 Severity PIC S9(4) BINARY.  00030000
                04 Msg-No PIC S9(4) BINARY.    00031000
                03 Case-2-Condition-ID         00032000
                REDEFINES Case-1-Condition-ID. 00033000
                04 Class-Code PIC S9(4) BINARY. 00034000
                04 Cause-Code PIC S9(4) BINARY. 00035000
                03 Case-Sev-Ctl PIC X.         00036000
                03 Facility-ID PIC XXX.        00037000
                02 I-S-Info PIC S9(9) BINARY.   00038000
            
```
- Remote Error List:** A table showing 3 messages:
 

ID	Message	Se...	Line	Location	Host Name	Date
IGYPS2106	IGYPS2106-S "DIVI" was found in the "VALUE" stat...	2	40	/DEMOVSE/IGZTMATH...	Local	Jan 26, 2007 4:39:27 PM
IGYOS4027	THE SYSTEM OPTION "SYM" IS INTERPRETED AS "...	0	-1	IGZTMATH.C	DEMOVSE	Jan 26, 2007 4:41:09 PM
IGYPS2106	"DIVI" WAS FOUND IN THE "VALUE" STATEMENT. ...	2	40	IGZTMATH.C	DEMOVSE	Jan 26, 2007 4:41:09 PM
- System Tray:** Shows the taskbar with applications like Command Prompt, Plug-in Development, VSE - IGZTMATH.cbl, and Paint. The system clock shows 4:44 PM on Friday, 1/26/2007.



## z/VSE local and remote Compile

The screenshot displays the VSE IDE interface. The main editor window shows the following code snippet:

```

Line 40      Column 81      Insert
--*A-1-B-----2-----3-----4-----5-----6-----7--|-+-----8
02 Condition-Token-Value.          00027000
COPY CEEIGZCT.                    00028000
03 Case-1-Condition-ID.            00029000
04 Severity PIC S9(4) BINARY.      00030000
04 Msg-No PIC S9(4) BINARY.        00031000
03 Case-2-Condition-ID            00032000
REDEFINES Case-1-Condition-ID.    00033000
04 Class-Code PIC S9(4) BINARY.    00034000
04 Cause-Code PIC S9(4) BINARY.   00035000
Case-Sev-Ctl PIC X.                00036000
Facility-ID PIC XXX.               00037000
Info PIC S9(9) BINARY.             00038000
00039000
DIVISION.                          00040000
00041000
00042000
00043000
00044000
MESSLOG' USING ARG1RS, FC, RESLTRS. 00045000
*****                               00046000
    
```

The context menu is open over the `REDEFINES Case-1-Condition-ID.` line. The menu items include:

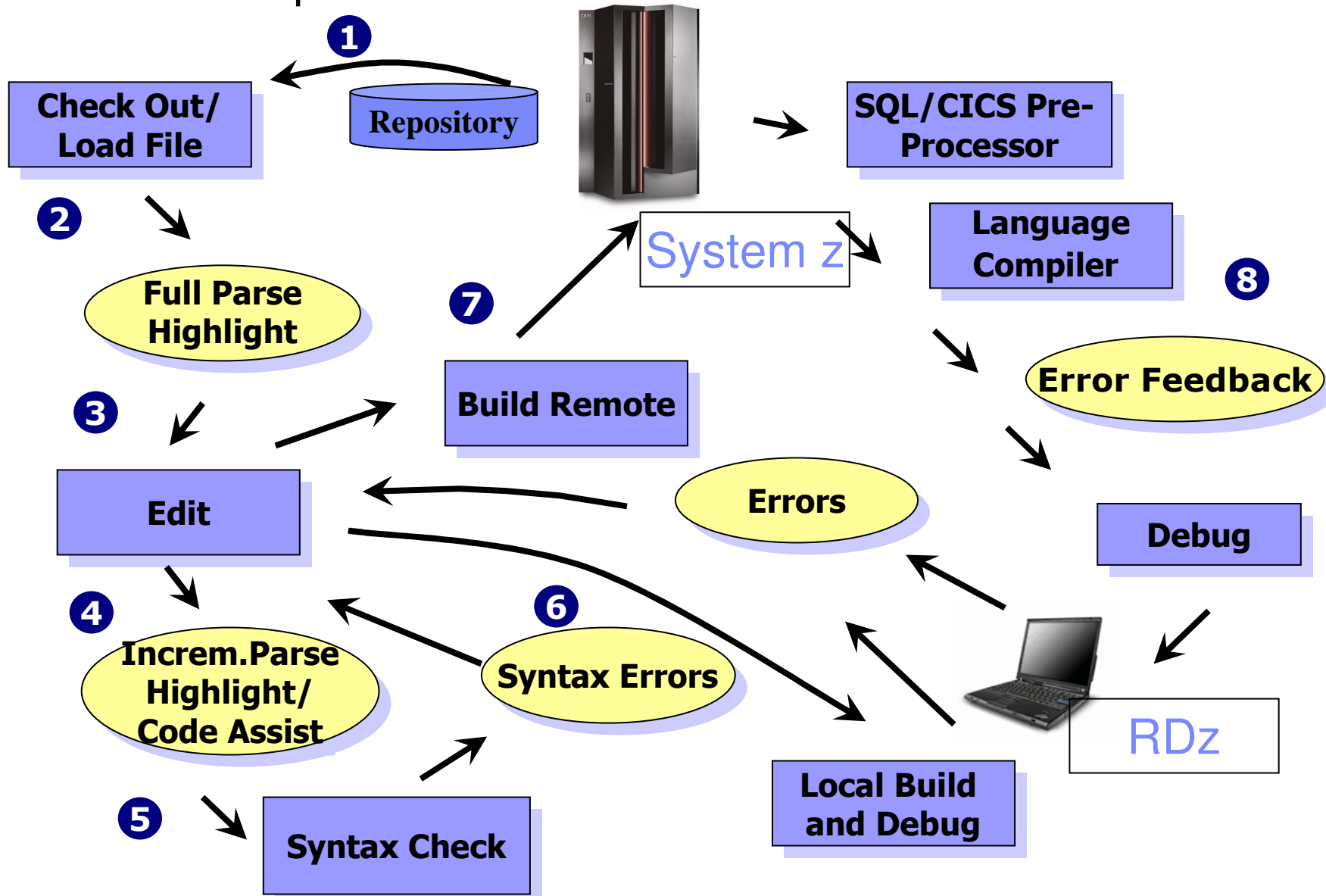
- New
- Go Into
- Go To
- Open
- Open With
- Refresh
- Expand
- Collapse
- Rename...
- Copy
- Move...
- Delete...
- Search...
- Run
- Debug
- Team
- Compare With
- Replace With
- VSE
  - RemoteCompile
  - Info
  - Upload
- Host Connection Emulator Support
- Local Syntax Check
- Nominate as Entry Point(B)
- Open Welcome Page(Q)
- Properties(Z)

The 'Problems' window at the bottom shows the following error:

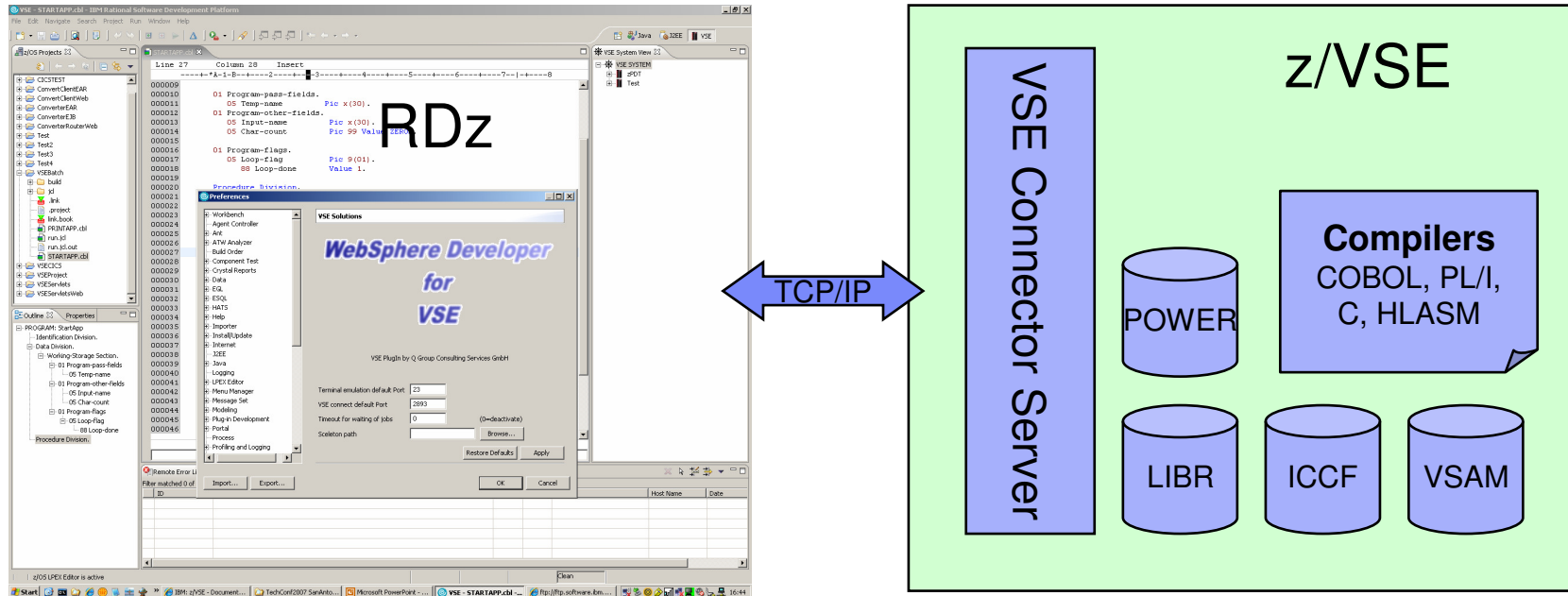
Page	Se...	Line	Location	Host Name	Date
1	S2106-S	2	'DIVI' was found in the 'VALUE' stat...	Local	Jan 26, 2007 4:39:27 PM

The system tray at the bottom right shows the date and time: 4:40 PM, Friday, 1/26/2007. The taskbar shows the active window is 'VSE - IGZTMATH.cbl'.

# RDz Development Process

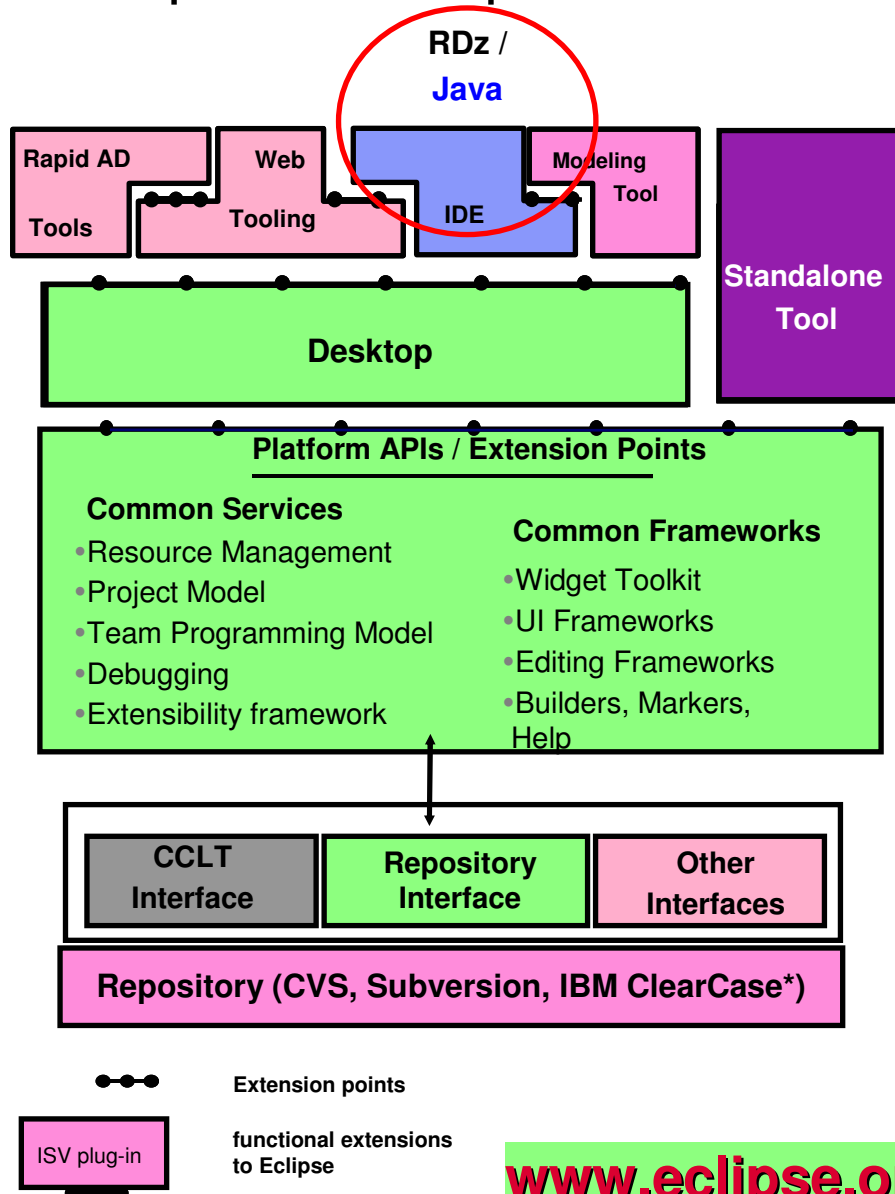


# (1) Development of COBOL applications in RDz



- Development of COBOL
  - batch and CICS application
    - Source code editing/checking
    - Access to z/VSE within the tool (console and 3270 access)
    - Compile, Link and error feedback from z/VSE
- Additional supported languages: PL/I, ASM, C, BSM Maps

# Eclipse – the open Standard for application development



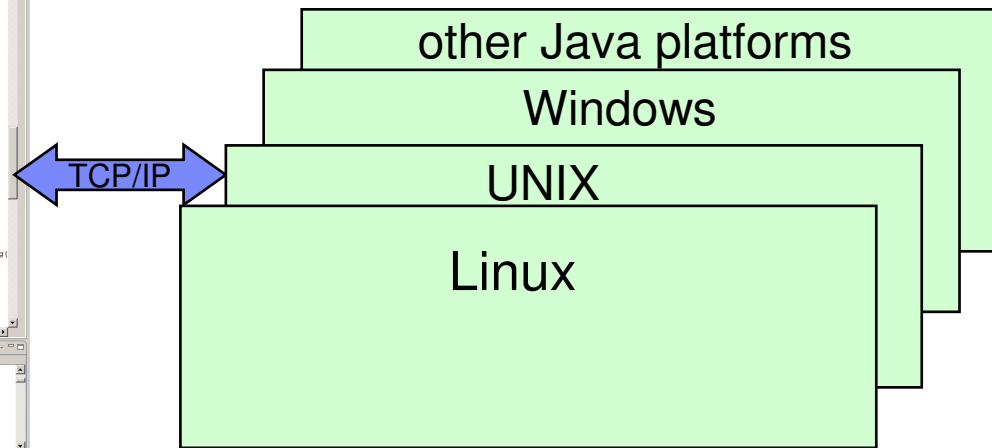
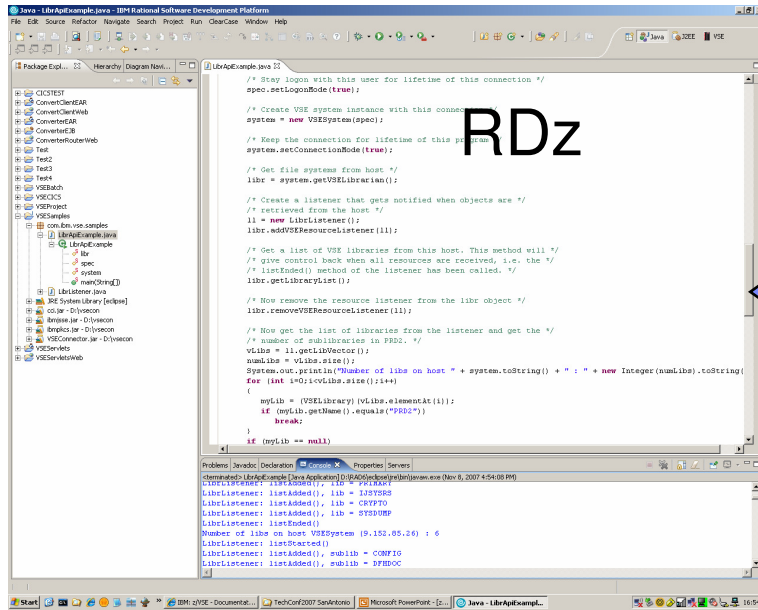
## What is Eclipse about:

- Open source development framework
  - with modern Editors
  - syntax help & check
  - semantic check
- Centralized source code maintenance
  - entire source code in central Repository
  - cross platform project administration
- Versioning software interface
  - CVS, Subversion, or IBM ClearCase
  - automatic Workgroup-control
    - i.e. development groups, system group
- Open for ISVs development Plug-Ins
  - Integrated Development Environments (IDE)
    - for System z (WDz, RDz)
    - for Java, COBOL, PL/I, ASM,C
  - Application analysis and optimization
    - Analyze the applications and workflows with graphical correlations
  - IBM HATS Development Plug-In
    - develop new front-ends to 3270 apps.
  - IBM EGL development Plug-In for z/VSE
    - follow-on to Visual Age Generator

[www.eclipse.org](http://www.eclipse.org)



### (3) Development of Java applications in RDz

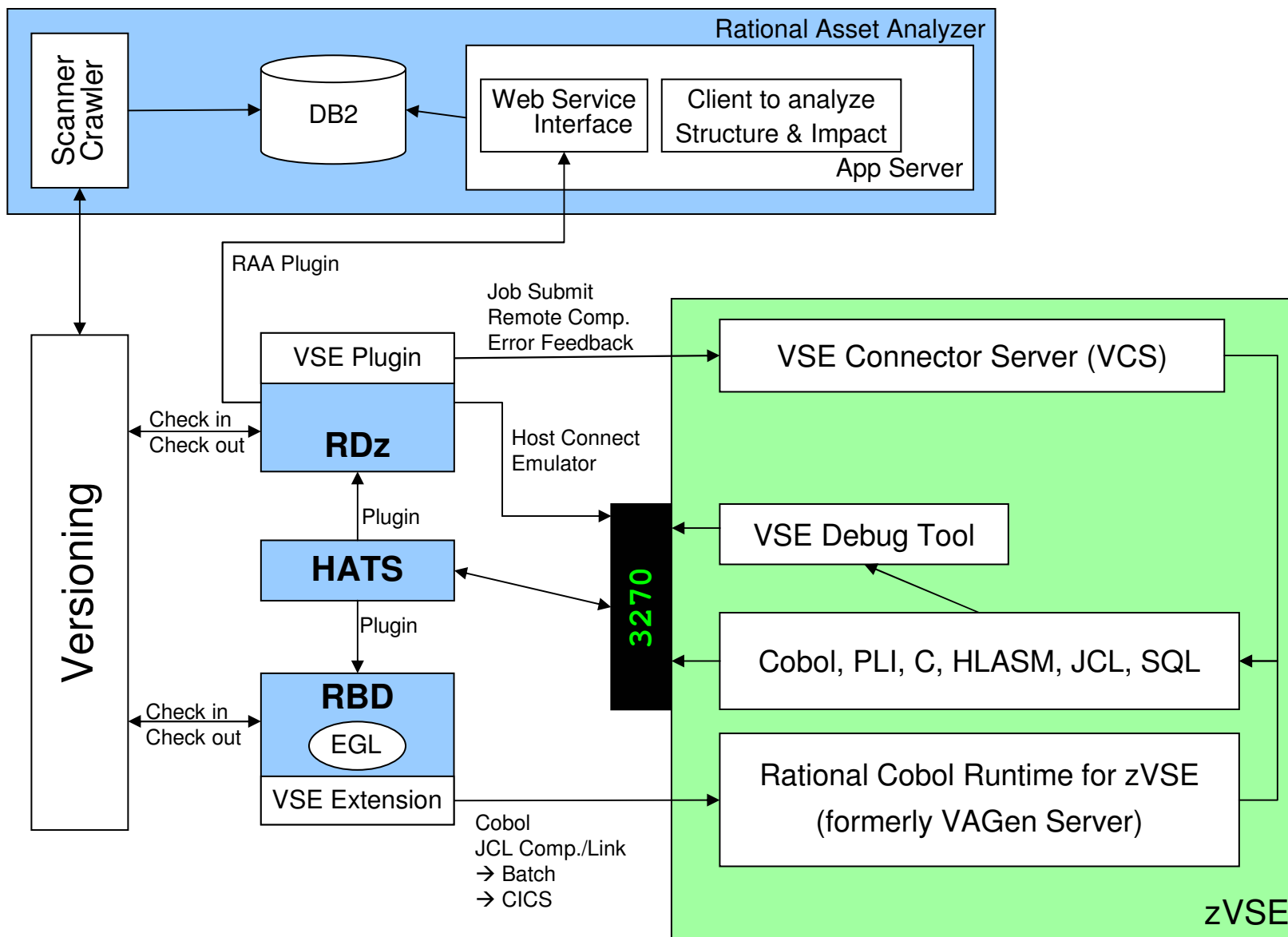


- Development of native Java applications
  - for systems like UNIX, Linux, Windows or other Java platforms
  - Edit, compile and Build
  - Test the Java application in the integrated WebSphere test environment and access z/VSE resources
  - **additional supported languages are C, C++, REXX**
  
- Development of Java applications to access z/VSE resources
  - use of z/VSE Java-Based Connectors
  - develop SOA components to access z/VSE services

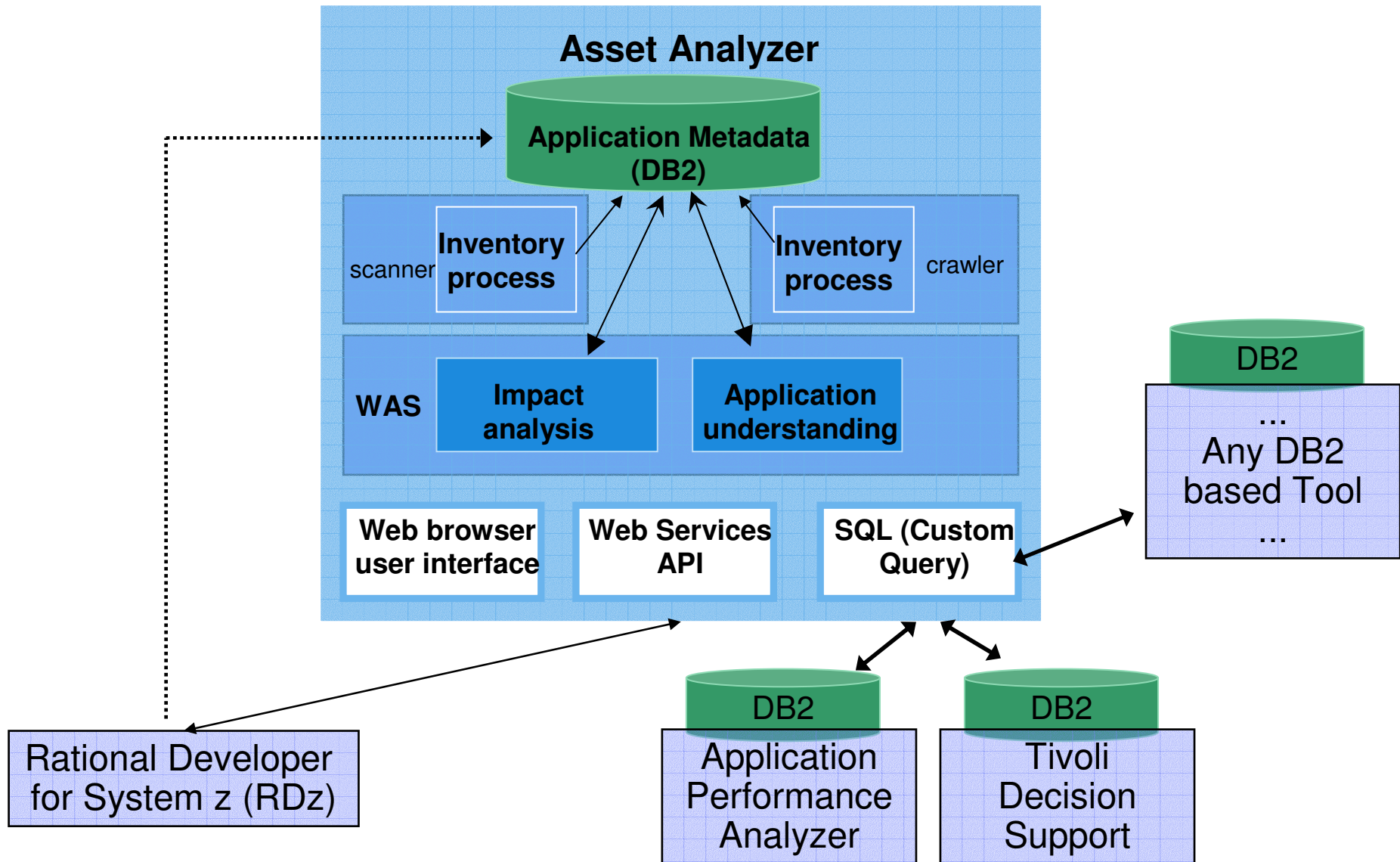


## Conclusion: Development for all platforms with one tool set

- A modern tool set to support z/VSE development and maintenance
  - modern editor for enhanced productivity
  - tools to analyse and optimize existent applications and workflow
- Common framework for enterprise development
  - standard for all developers
    - example: z/VSE with COBOL, Linux on System z with Java
  - easy skill transfer
- Open source framework
  - commonly thought in schools and universities
  - smooth introduction of new developers to the mainframe

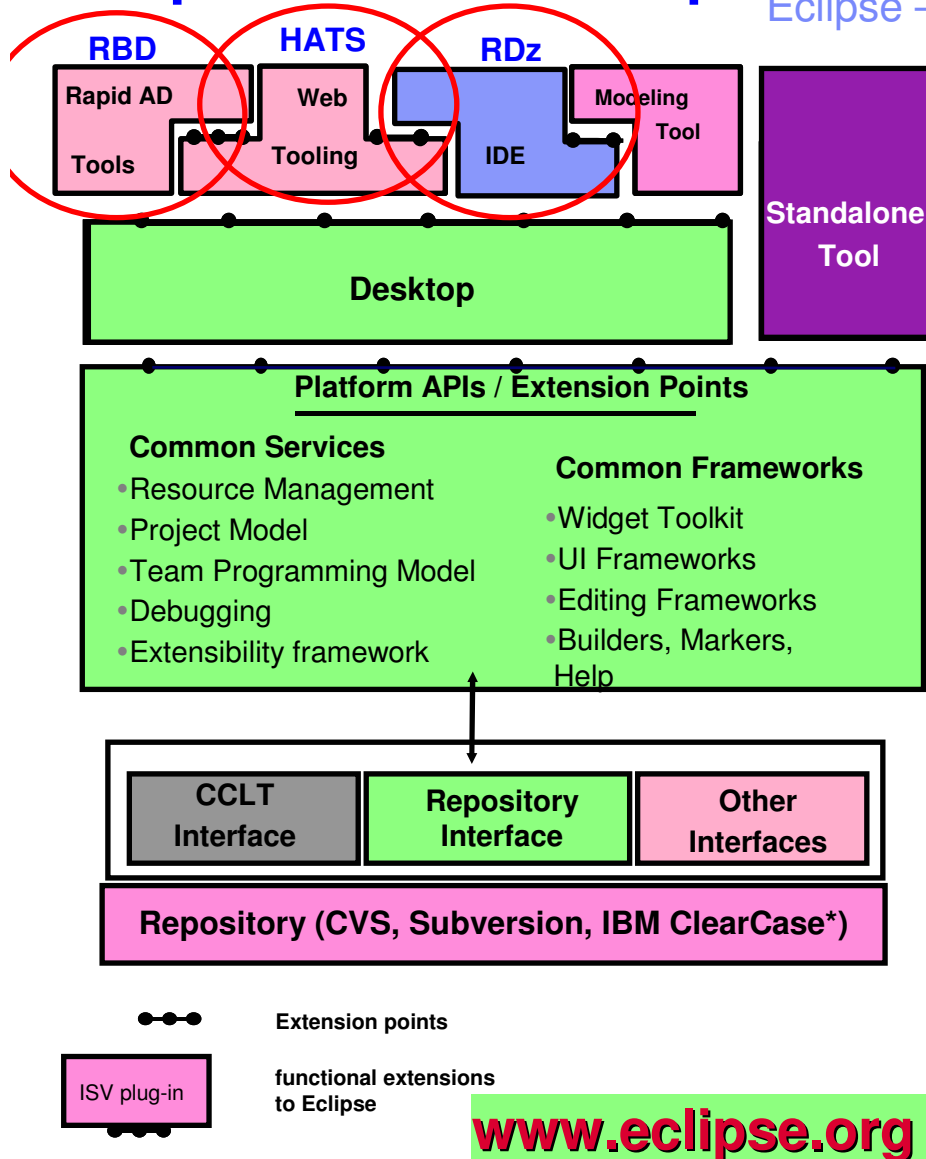


# Asset Analyzer



# Eclipse based Development Environments for z/VSE

Eclipse – the open Standard for application development

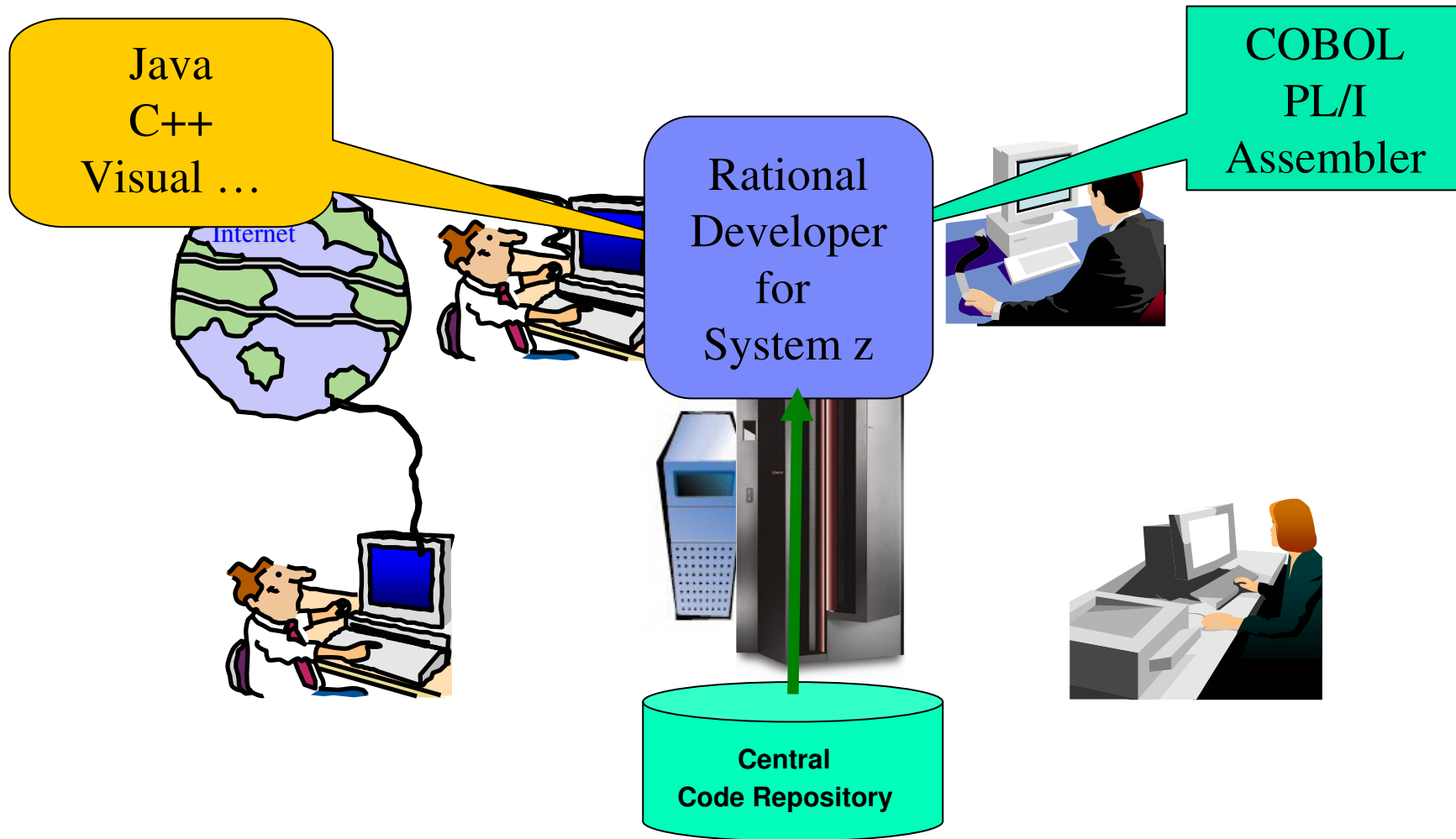


## What is Eclipse about:

- Open source development framework
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  - syntax help & check
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- Centralized source code maintenance
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  - cross platform project administration
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  - CVS, Subversion, or IBM ClearCase
  - automatic Workgroup-control
- Open for ISVs development Plug-Ins
  - 1) Integrated Development Environment (IDE)
    - Rational Developer for System z (RDz)
    - for Java, COBOL, PL/I, ASM,C
  - 2) IBM HATS Development Plug-In
    - develop new front-ends to 3270 applications
  - 3) IBM EGL development for z/VSE
    - Rational Business Developer (RBD)
    - EGL Plug-In for z/VSE
    - follow-on to Visual Age Generator

# Summary

## Eclipse – an open Integrated Development Environment for the enterprise





## ***z/VSE Additional Information***

- z/VSE Home Page  
<http://www.ibm.com/zvse/>
- z/VSE Solutions and Utilities  
<http://www-03.ibm.com/systems/z/os/zvse/solutions/>
- RDz  
<http://www-01.ibm.com/software/awdtools/rdz/>
- RDz Plug-In for VSE  
<http://www.qgrp.de/index.php?show=produkte&id=1&detail=wdz>
- Live Virtual Classes for RDz for VSE  
<http://www-03.ibm.com/systems/z/os/zvse/education/index.html#completed>



- e-business Solutions for VSE/ESA SG24-5662
- e-business Connectivity for VSE/ESA SG24-5950
- CICS Transaction Server for VSE/ESA  
CICS Web Support SG24-5997
- Handbook For WebSphere ( Connectors to z/OS and VSE ) SG24-7042

We appreciate your comments on z/VSE: [zvse@de.ibm.com](mailto:zvse@de.ibm.com)