

IBM TRAINING



E51

Approaches to Application Development for z/VSE

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HiperSockets	OS/390*	WebSphere*
	S/390*	xSeries
	SNAP/SHOT*	z/Architecture
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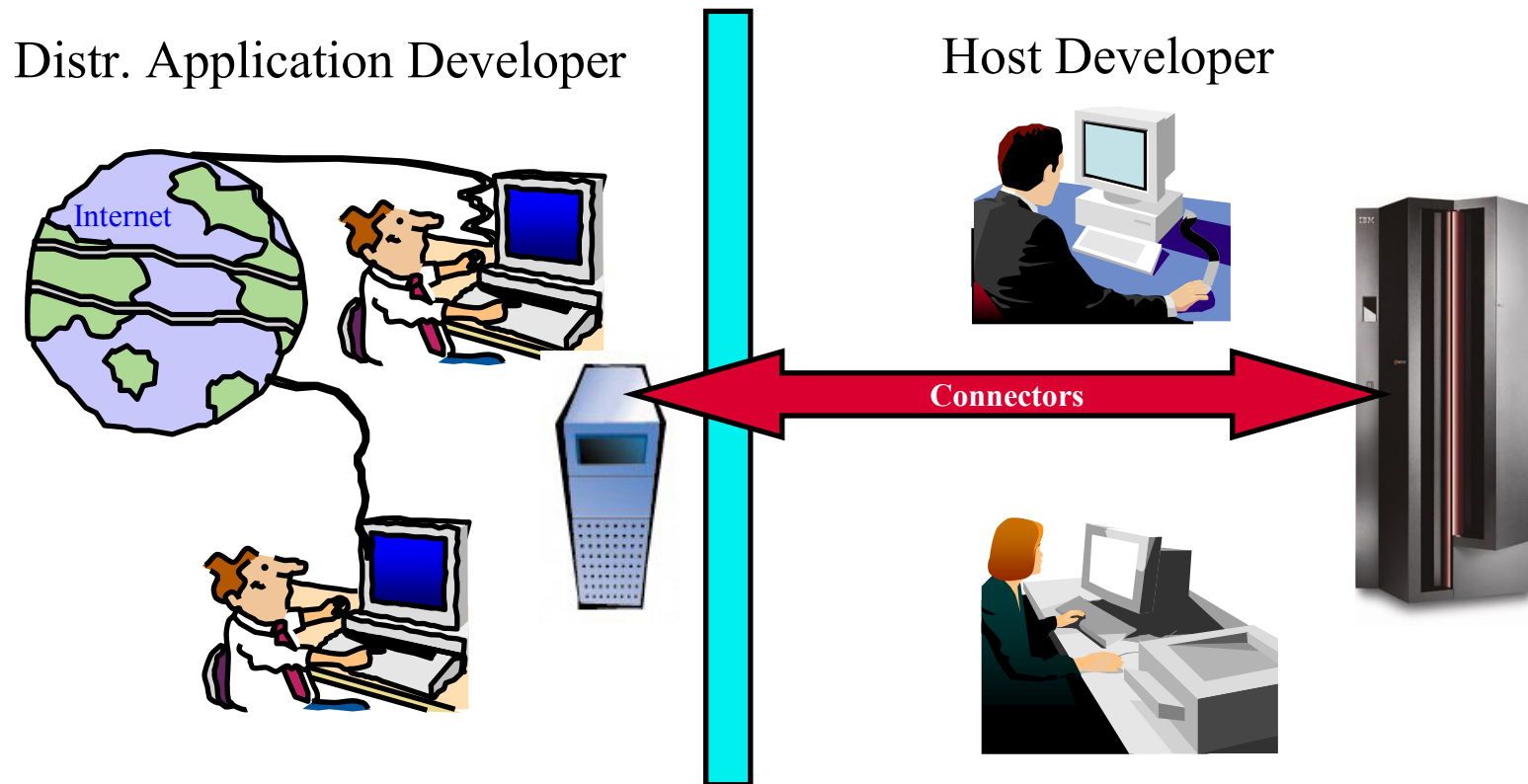
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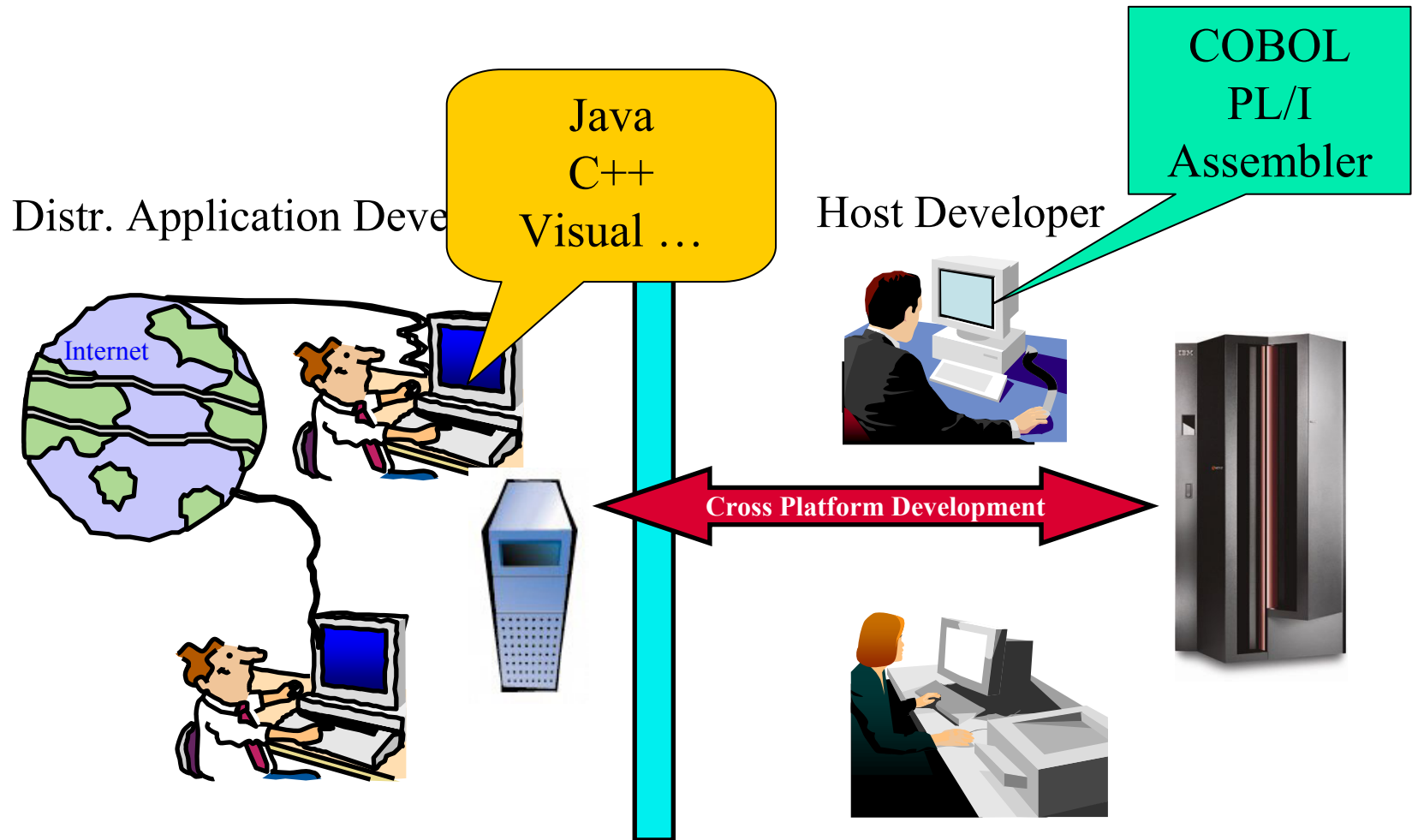
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IT environments and their challenge

- ▶ Two IT worlds want a common solution

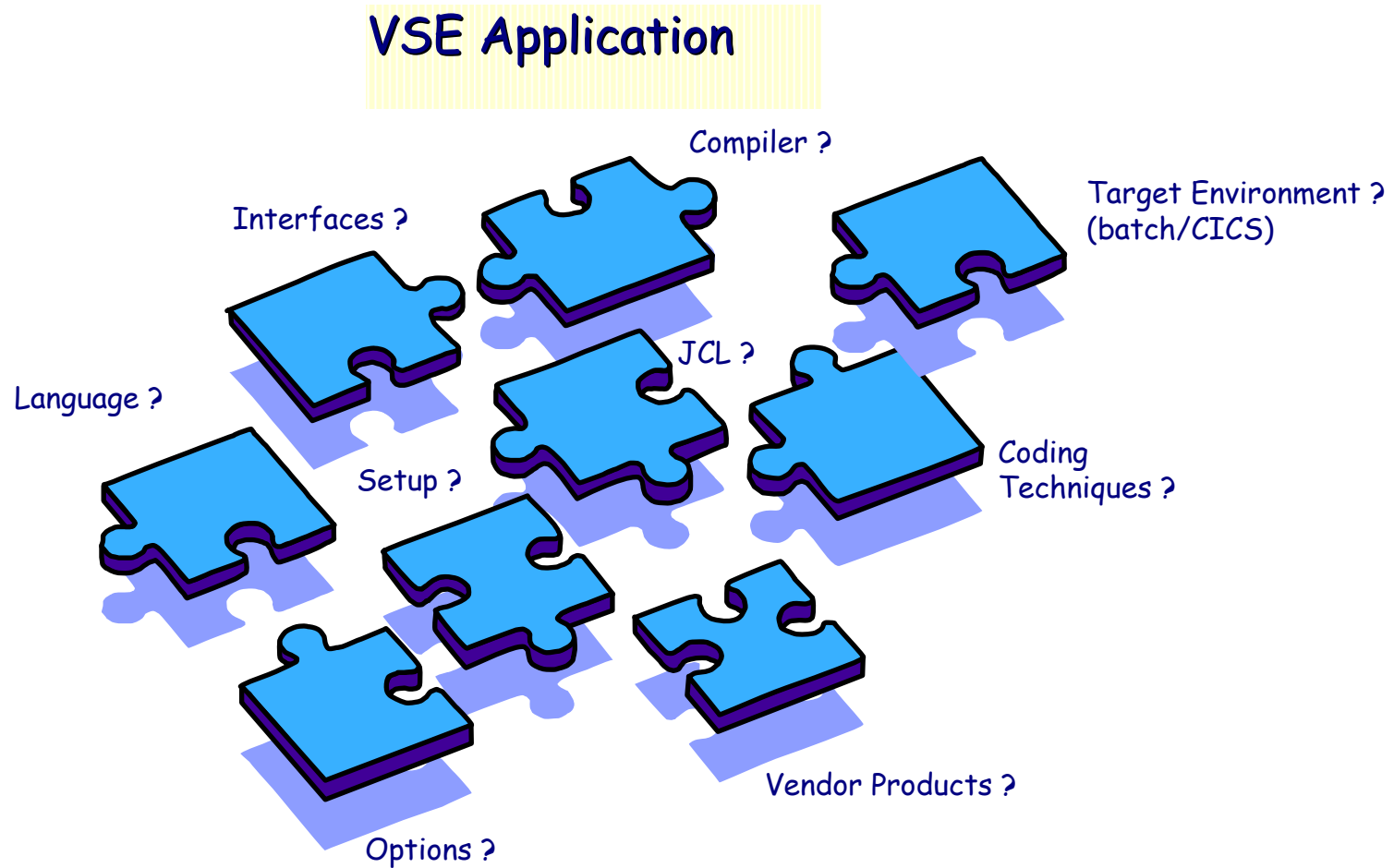


'Distributed' Development Landscape...



Native VSE Application

- Typical interdependencies ...

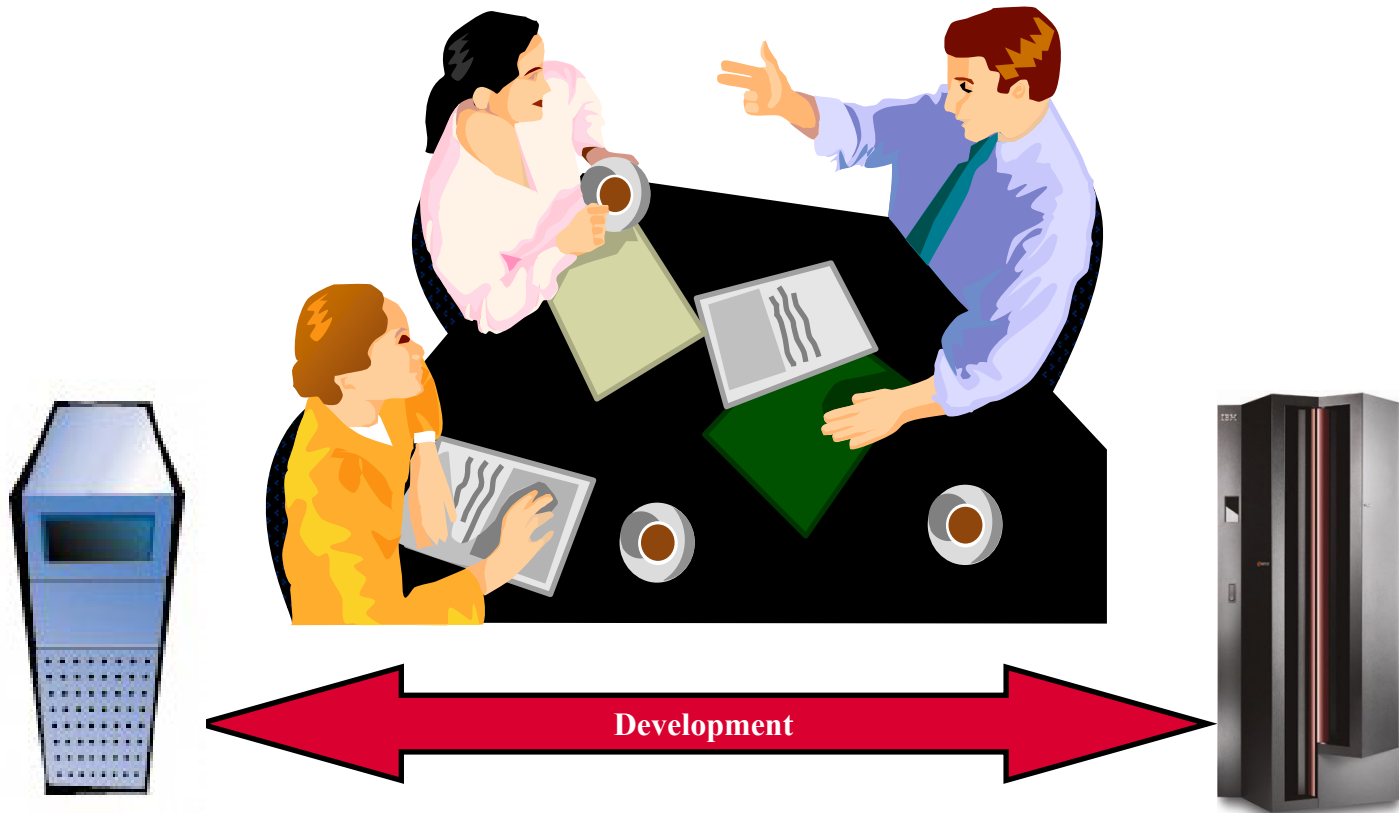


Goals of today's IT

- **Optimization of Development**
 - performant, less resources
- **Omit redundancies**
 - optimize processes
- **Reduce IT complexity**
 - efficient data flows and data stores

IT challenges

- ▶ **Key success factor - Effective Communication**
- ▶ **integrate all developer participating in the solution**



VSE Development options

■ Existing applications

- 1) Use of modern tools for development (i.e. PC tools instead of ICCF)
- 2) Modernize – develop graphical interfaces (in Java or COBOL)

■ New Applications for VSE

- 1) Use of modern development environments (i.e. Eclipse based)
- 2) Cross-Platform solution development environments (i.e. 4GL Methods)

VSE existing application considerations

- **Interactive Interface Support to build your applications**
 - Primary Library, OPTION 8, in order to build your applications

- **JCL Skeletons for various application languages and call structures**
 - Batch main/subroutines, CICS or DB2 target environments etc.
 - Considerations for suitable translate and compile steps
 - Language independent stubs such as CICS DFHELII ...
 - Appropriate compile and pre-processor options etc.

- **Security Issues**
 - Every CICS TS transaction needs to be "security-enabled" prior to first execution
 - The IUI provides associated support via selection path "Resource Definition" --> "Define Transaction Security"

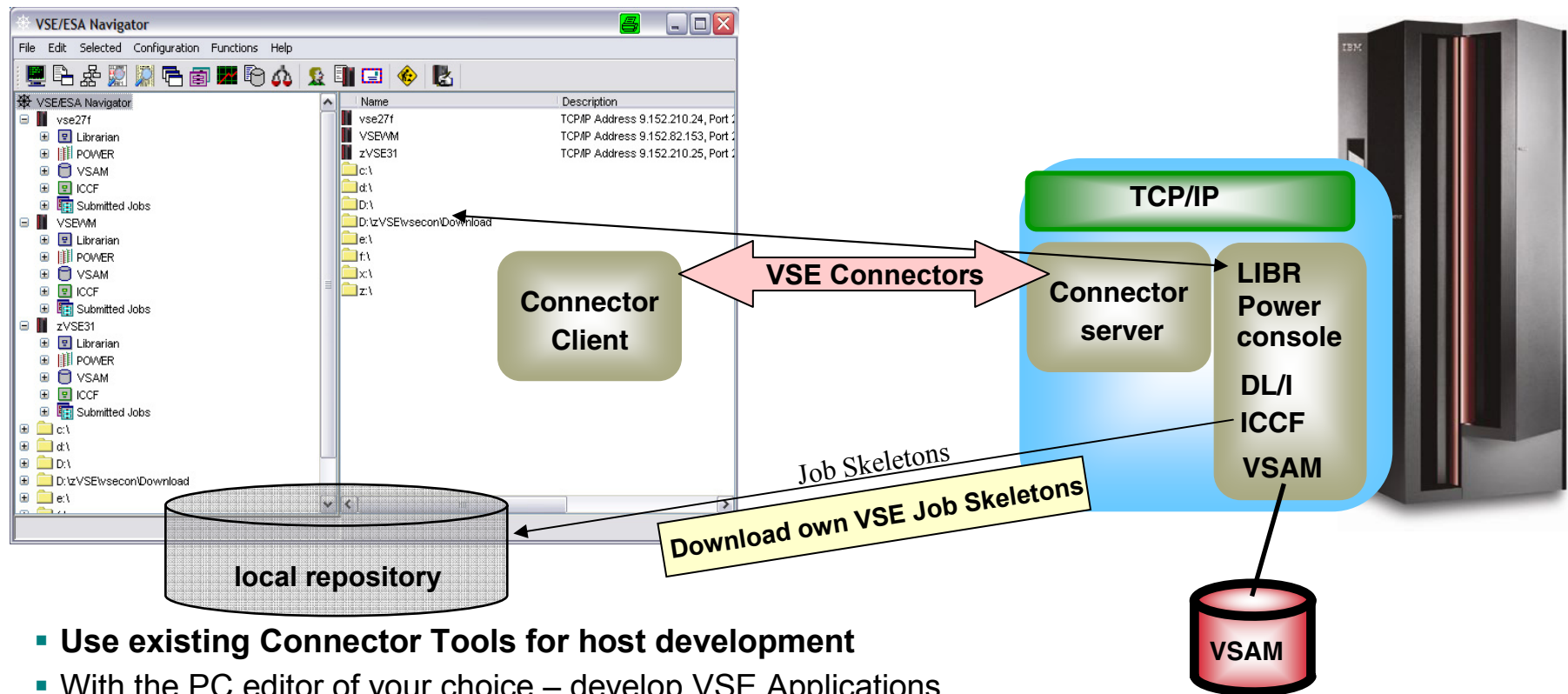
- **Program Maintenance from outside-VSE environment**
 - needs to ensure use of current compile skeletons, related options, stubs etc.

Existing Applications

(1) Use of existing modern tools for z/VSE development

PC/Workstation with VSE Navigator

z/VSE Server



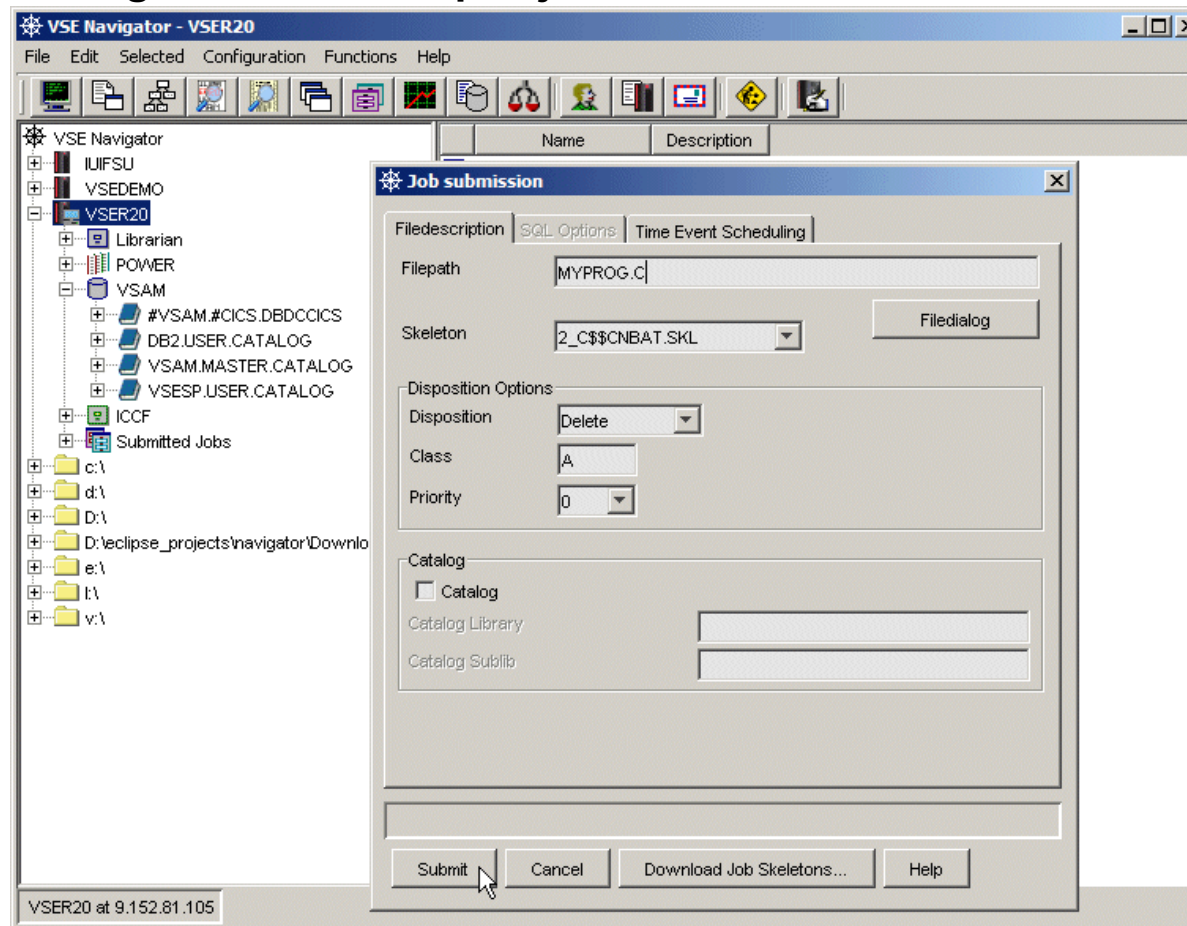
- Use existing Connector Tools for host development
- With the PC editor of your choice – develop VSE Applications
- Use Helper plugins for PC – VSE process preparation (Compile, Analysis)

Existing Applications

(1) Use of existing modern tools for z/VSE development

Helper plugins

- **VSE Navigator: VSE compile/job submission ...**



Existing Applications

(1) Use of existing modern tools for z/VSE development Helper plugins

■ JCalc_LEVSE Tool

- SVA related Phase allocations – report, downloaded to PC ...
<http://www.ibm.com/servers/eserver/zseries/zvse/downloads/tools.html>

■ JLink_LEVSE Tool

- Analyze lists + generate report in Browser
<http://www.ibm.com/servers/eserver/zseries/zvse/downloads/tools.html>

■ JDisplay_AR_Commands

- Java front-end in WebSphere environment, connecting to z/VSE server, exploiting VSE Connector API for console communication ...
<http://www.ibm.com/servers/eserver/zseries/zvse/products/connectors.html>

Existing Applications

(1) Use of existing modern tools for z/VSE development Helper plugins

JCalc_LEVSE Tool (Part 1)

- ❑ **Calculator for LE/VSE load in the Shared Virtual Area**
 - Java GUI interface to choose one or more LE/VSE component(s)



- ❑ **Excerpt of downloaded VSE LIBR input data, to analyze**

M E M B E R NAME	T Y P E	C R E A T I O N DATE	L A S T UPDATE	B Y T E S RECORDS	L I B R BLKS	C O N T STOR	S V A ELIG	A - R - MODE
CEEFMON	PHASE	01-10-29	03-01-08	20 B	1	YES	YES	31 ANY
CEEFMTM	PHASE	01-10-29	03-01-08	20 B	1	YES	YES	31 ANY

JCalc_LEVSE Tool (Part 2)

□ The basic functionality

- Allocate descriptions to modules identified (focus on SVA eligible routines)
- Prepare a JTable overall view (with option to calculate a storage summary)

Routine Name	Description	Decimal Size	SVA Eligible	AMODE	RMODE	SVA List
CEEBINIT	Initialization/termination for batch	53856	YES	24	24	\$SVACEE
CEEBLIBM	Library routine retention init/term	20184	YES	ANY	24	\$SVACEE
CEEBLRR	Library routine retention interface	920	YES	ANY	24	\$SVACEE
CEEBNATX	Null Abnormal termination exit	2	YES	31	ANY	\$SVACEE
CEEPXTAN	Batch Abnormal termination exit table	274	YES	31	ANY	-

Note: Large phases marked red, default SVA entries in blue

Buttons: Help, Calculate SVA loadlist, Cancel

- Generate VSE shared virtual area (SVA) statistics/storage report

Loadlist	SVA-31 Requirement	SVA-24 Requirement	Setup Type
\$SVACEE	1122646	272608	IBM default
\$SVAEDCM	1643420	0	IBM default
\$SVAEDC	2291284	160	Optional
\$SVAIBMM	212928	37024	Recommended
\$SVAIBM	292719	37024	Optional
\$SVAIGZM	155864	0	Recommended
\$SVAIGZ	411240	169232	Optional

OK

Existing Applications

(1) Use of existing modern tools for z/VSE development Helper plugins

JLink_LEVSE_Analyzer Tool (Part 1)

Cross-check VSE Compile/link Lists

- GUI application front-end (3 step user-interaction: file chooser, build, show report)
- VSE application summary overview (e.g. resources involved, coding techniques ...)
- Event/context specific summaries & explanation (e.g. compile- options/messages ...)
- Specific warnings ... (e.g. indicators for improper stub usage etc.)



JLink_LEVSE_Analyzer Tool (Part 2)

□ Sample report generated (web browser view)

C Prelinker - Object Resolution events

CEESETL	Unresolved prelink module reference. Also check linkage editor resolution
WARNING EDC4015:	Unresolved references are detected. Verify if the reference(s) given in this section are later resolved by the linkage editor

C Prelinker - Writable Static events

INFORMATIONAL EDC4013:	No map contents displayed as no writable static was found
-------------------------------	---

Linkage editor - Autolink events

CEESG003	Signature module for C/VSE has been linked into application phase	Library reference not visible in link list (typical for C)
CEESTART	Compiler generated default entry point available	Library reference not visible in link list (typical for C)
EDCINPL	LE/C initialization triggered (might involve an assembler program with EDCPRLG and EDCEPIL macros coded)	Library reference not visible in link list (typical for C)
PRINTF	C Run-Time library function - printf (Format and Write Data)	Library reference not visible in link list (typical for C)

Linkage editor - Unresolved Reference events

EXTRN CE\$SETL	Do not code the CEESETL callable service. For C routines the setlocale() function should be used instead
WXTRN @@DLL	Internal LE/C reference, fine to be present

Existing Applications

(1) Use of existing modern tools for z/VSE development
Helper plugins

JDisplay_AR_Commands (Part 1)

❑ GUI Communication with VSE Console

JDisplay_AR_Commands - Copyright IBM Corp. 2005 - ...

Purpose: Illustrate new LE/VSE AR-commands

Connection Pane

Please enter VSE IP address: yse9.boeblingen.de.ibm.com

Please enter VSE user ID: demo

Please enter password:

Command Process Pane

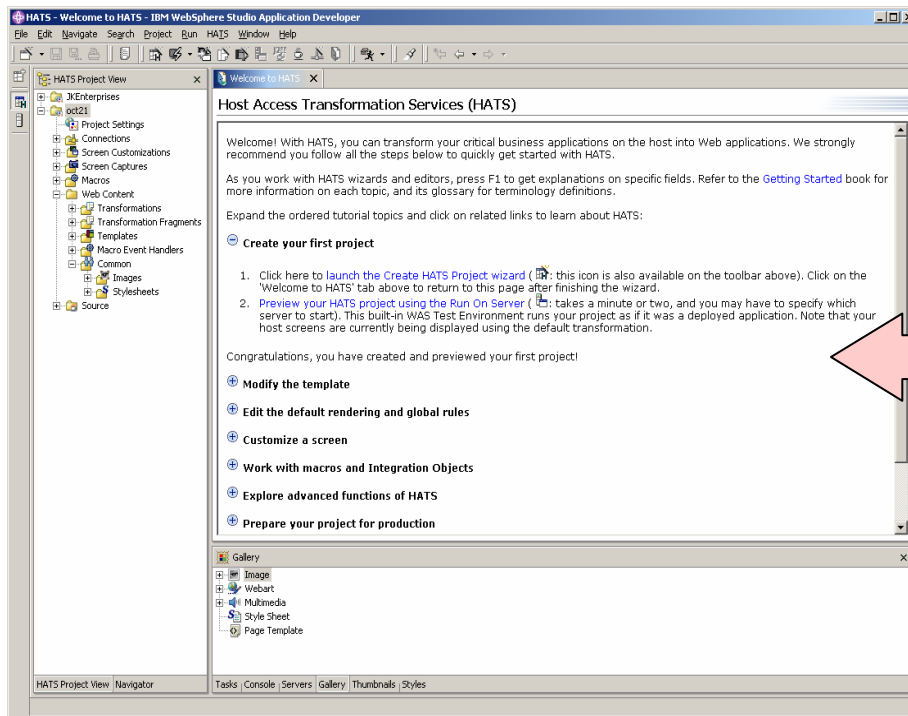
Please enter AR command:
D CEE,CEEDOPT

START HELP EXIT

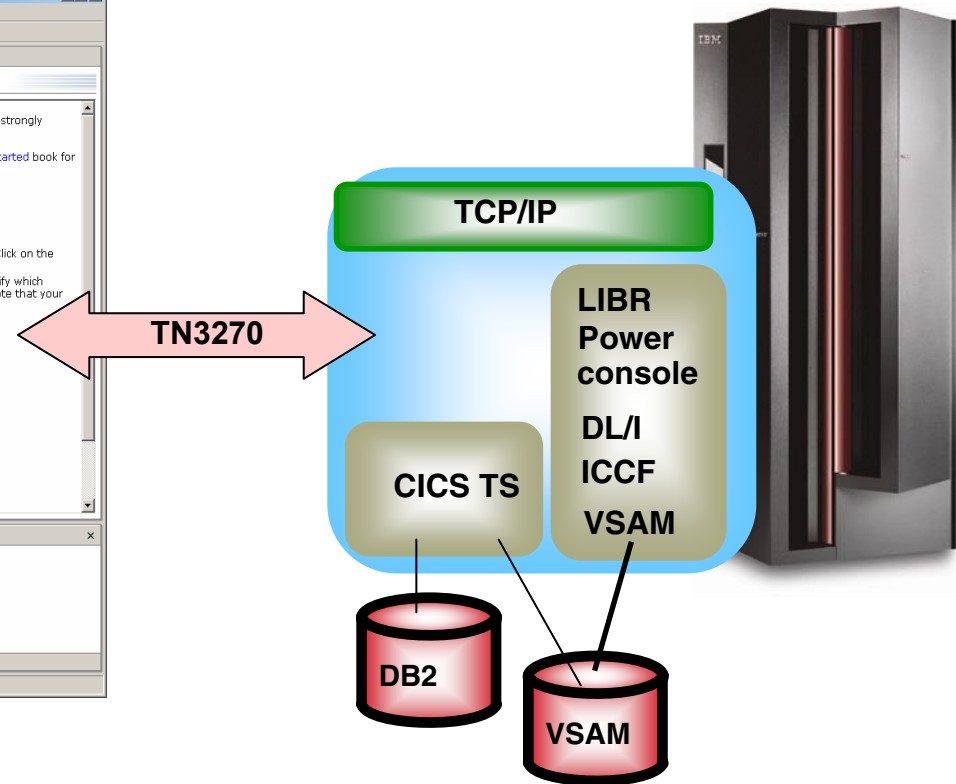
Existing Applications

(2) Modernize – Develop graphical interfaces – in Java

PC/Workstation Front-End Development



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

HATS Advantages:

- Combine / Integrate

```

HodConn:localhost:localhost:server1:ubsdemo.ear#1
SC4103      Check Entitlement by Customer number      RALYSC1
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 . . . . .

F1=Search Customer database  F2=Exit  F6=Create profile  F10=Messages
F12=Cancel  F14=Inventory search  F20=Support services
YA* ho localhost:server1:ubsdemo.ear#1 06/04/02
  
```

```

HodConn:localhost:localhost:server1:ubsdemo.ear#5
File Distribute Inquire Options Help
200      Search Results

For a second, press a function key "or" type an Action Code and press Enter.
A=Address  B=Backup  C=CC-list  E=Dept title  F=Feedback
I=Show Id  J=JobResp(aper)  K=Calendar  L=Local data  O=Opdate/Opn
P=Phone  R=Res-To-All  T=To-list  U=Upgr-Chain  V=View record

Column 42 To 81 of 62
AREAO4 AREALL ASSIGNE ATLAA8 AUSTIN BETESDA BOCA BOULDER BURLINGOT
CHARLOTT CHICAGO CT DALAI0 DALLAS DAYTON FISHKILL ISSCAEPO KP LEX LOTUS LOHRES
Name      Act  Tie-line  ExpSt  Mode  User  ID  Mail
Carter-Willis, A. P. (Antoinette)  -  596-3739  Reg  IBMUSM13  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  IBMUS3  WILLISW  na

Command Menu
F1=Help  F2=Set 2  F3=Exit  F4=Send note  F5=Res-To-All  F6=Show dept/team
F7=Backward  F8=Forward  F9=Command  F10=Actions  F11=Dist list  F12=Cancel
YA* ho localhost:server1:ubsdemo.ear#5 14/02/02
  
```

```

09/23/2003 02:21 PM <DIR>  \Utilities
11/28/2003 02:23 PM <DIR>  \video
01/05/2004 09:24 AM <DIR>  \vslick
01/03/2004 10:40 AM <DIR>  \WINDOWS
10/16/2003 09:26 AM <DIR>  \win_jee_131
01/05/2004 04:42 AM <DIR>  \wsad51
04/23/2003 05:21 AM <DIR>  \wsgpdrive
01/03/2004 10:40 AM 14,496 SysAdmin.log
01/03/2004 14 File(s) 4,175,691 bytes
98 Dir(s) 22,888,353,792 bytes free

C:\Documents and Settings\Administrator\
YA* b pl 24/04/02
  
```

JK Funds
Homepage > About Wealth Management in the US > Home

Market Update

Dow Jones	9959.71	37.85
NASDAQ	1918.26	13.61
S&P 500	1062.24	3.19
30 Yr Bond	5.191	0.04

Data from 5250 Source

SC4103 Check Entitlement by Customer number RALYSC1 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

Data from 3270 Host

Name	Phone	Type	Node	User	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	IBMUS3	WILLISW	na

Results from VT Data Source

Query Directory: c:\
93 Dir(s) 22,888,353,792 bytes free
14 File(s) 4,175,691 bytes

Existing Applications

(2) Modernize – Develop graphical interfaces – in Java

The screenshot displays a dual-screen environment. On the left is an 'iseriesd Terminal' window showing a green-on-black interface with a menu of links: JK Enterprises Home Page, SiteMap, Employees, Jobs at JK Enterprises, Press Articles, and Support. On the right is a Microsoft Internet Explorer browser window displaying the modernized web application for 'JK Enterprises'. The browser address bar shows 'http://localhost:8080/iseriesd//hats'. The web page features a navigation bar with 'Home' and 'Link' buttons, a main content area with a horizontal bar chart titled 'Inventory Table', and a 'Delivery Schedule' calendar for August 2002. Below the calendar is a 'Current Order' table with 'Photo' buttons for each item.

Description	Quantity
Baseball glove	35
Catcher's mit	20
Baseballs - 1 doz	40
Baseball bat	46
Football	33
Basketball	25
Tennis balls - 1 doz	41
Golf balls - 1 doz	27
Ice Skates	17

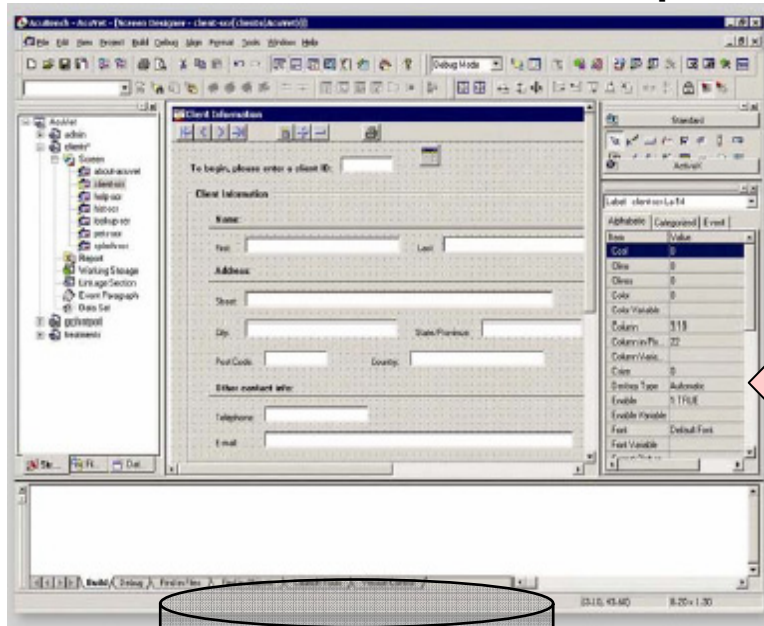
August 2002						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Current Order	Quantity	Image
Catcher's mit	10	Photo
Baseball bat	20	Photo
Football	10	Photo
Basketball	10	Photo

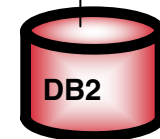
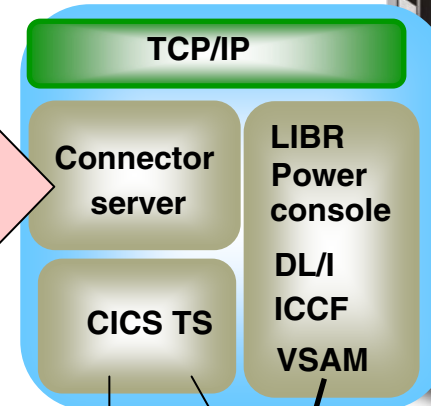
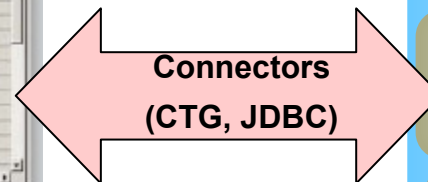
Existing and new Applications

(2) Modernize / new – Develop graphical interfaces – in Cobol

PC/Workstation COBOL Development



z/VSE Server



- Application development on PC, for VSE – in COBOL (i.e. ACUCORP)
- Use existing COBOL expertise
- COBOL Compiler and Runtime (COBOL Virtual Machine) on PC
- New application in COBOL – access to existing data and applications via Connectors (CTG, JDBC)

Existing Applications

(1) Use of existing modern tools for z/VSE development

Conclusion

- **Core applications can be developed, maintained with modernized methods**
- **Existing development expertise is used**
- **increased effectiveness**
- **modern versioning software can be used**

VSE Development options

■ Existing applications

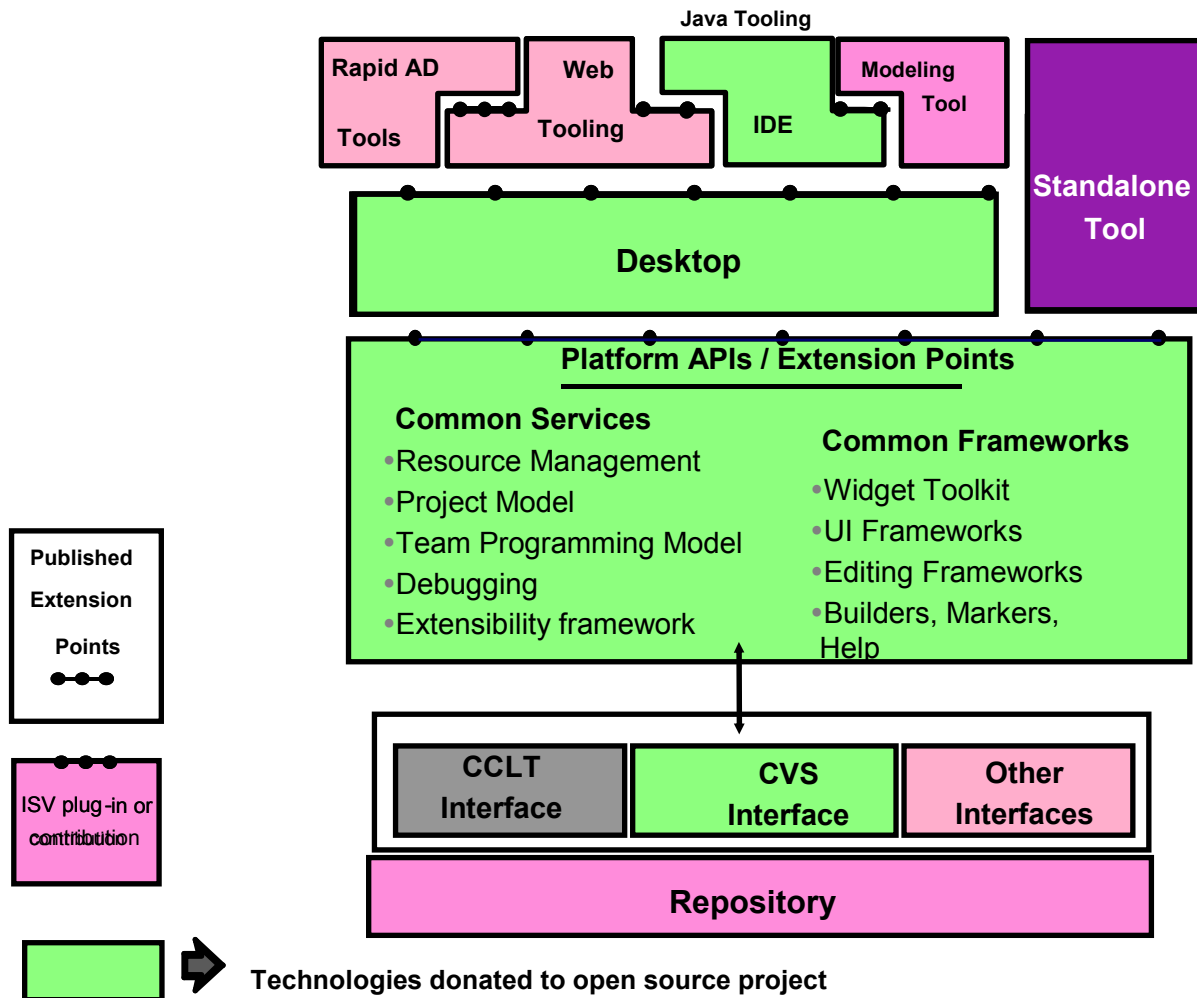
- 1) Use of modern tools for development (i.e. PC tools instead of ICCF)
- 2) Modernize – develop graphical interfaces (in Java or COBOL)

■ New Application for VSE

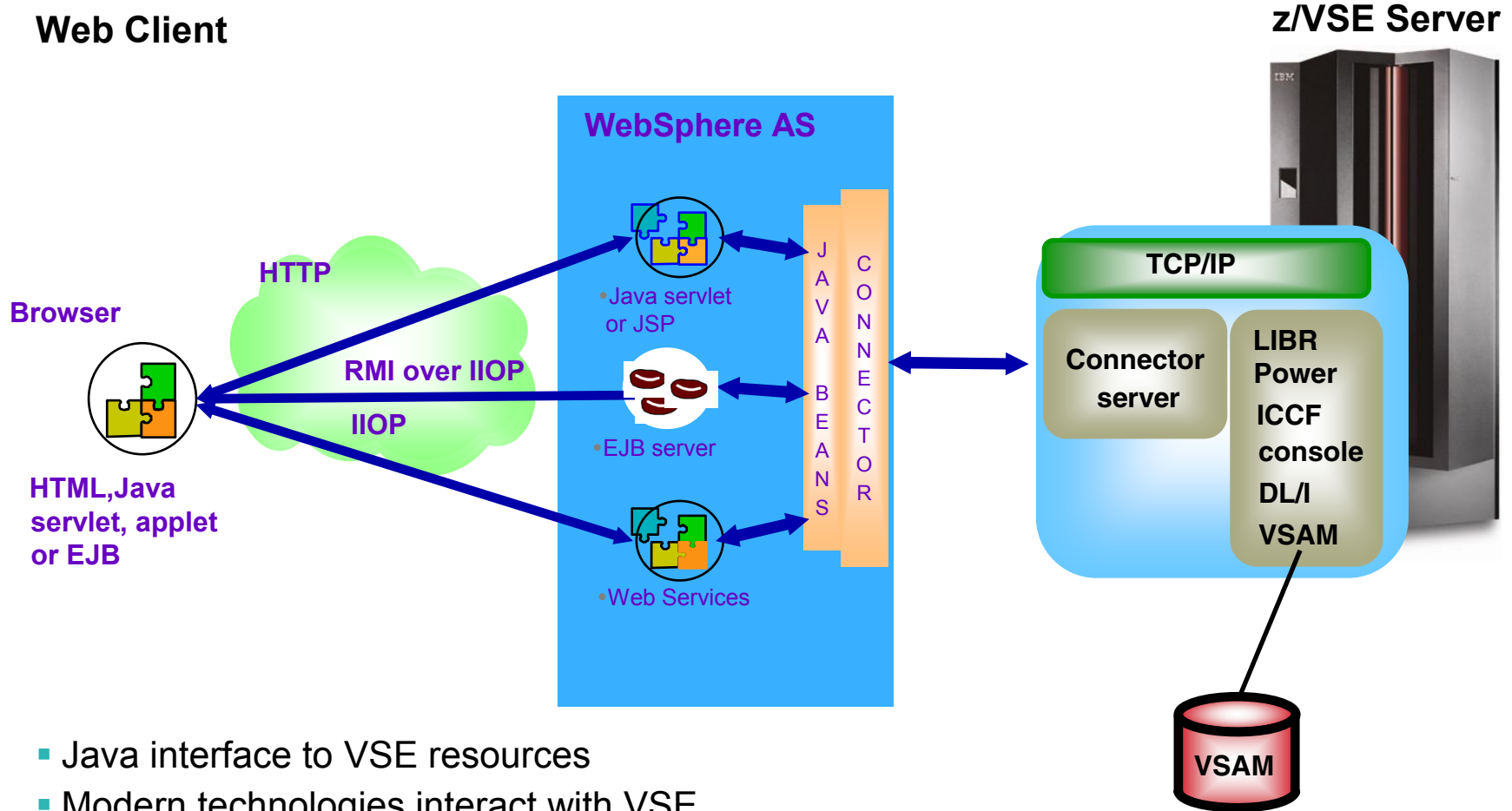
- 1) Use of modern development environments (i.e. Eclipse based)
- 2) Cross-Platform solution development environments (i.e. 4GL Methods)

New applications for VSE

(1) Use of modern development environment !



Real time access to VSE data and subsystems with Java-Based Connector

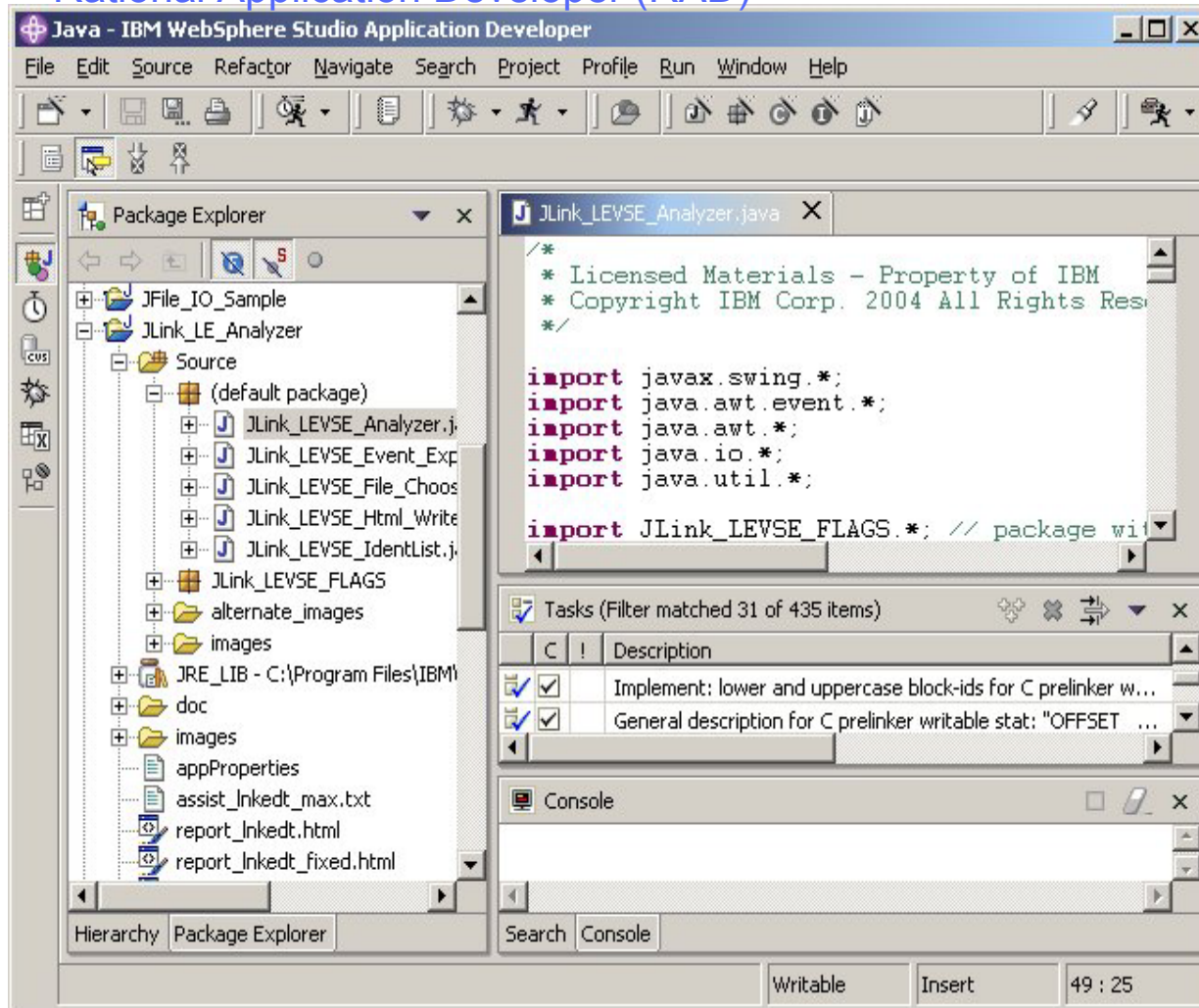
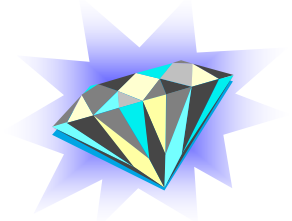


- Java interface to VSE resources
- Modern technologies interact with VSE

New applications for VSE

(1) Use of modern development environment !

WebSphere Studio Application Developer (WSAD) –
Rational Application Developer (RAD)



Based on the eclipse platform

<http://www.eclipse.org>

Open architecture for integrated
Web- & application development.
Supports the plug-in model

➤ Different Perspectives

Java-, Profiling-, Debugging-,
CVS Repository-, J2EE-, XML ...

➤ Basic Functions like:

Project-, class-, interface-
generation, code-formatting

➤ Control Windows

Source code, tasks, console-
messages, package explorer ...

➤ Developer Tools like:

Profile-agents for analysis,
javadoc generator

➤ Tools for execution, test

JDisplay_AR_Commands tool

□ VSE Console Messages in WebSphere Development Environment

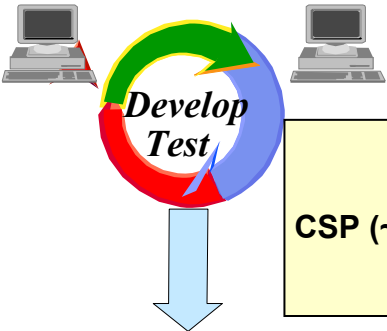
The screenshot displays the IBM WebSphere Studio Application Developer interface. The Package Explorer on the left shows the project structure for 'JDisplay_AR_Commands_GUI'. The main editor window shows the source code for 'JDisplay_AR_Commands.java'. The Console window at the bottom displays the following VSE console messages:

```

VSE Console line by line response from AR command: D CEE,CEEDOPT
AR 0015 Lang. Env. for VSE command processing completed
AR 0015 11401 READY
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1R88I OK : 1 ENTRY PROCESSED BY R RDR,CEL$OPT$
C1 0001 1047I C1 CEL$OPT$ 03910 FROM (SYSA) , TIME=16:58:36
C1 0046 // JOB CEL4OPTS - PRODUCE BATCH INSTALLATION-WIDE OPTIONS REPORT
DATE 03/02/2005, CLOCK 16/58/36
C1 0046 Options Report for Enclave CEL4OPTS 03/02/05 4:58:36 PM
C1 0046 Language Environment for VSE/ESA V1 R4.4
C1 0046
C1 0046 LAST WHERE SET OPTION
C1 0046 -----
C1 0046 Installation default ABPERC(NONE)
C1 0046 Installation default ABTERMENC(ABEND)
C1 0046 Installation default NOAIXBLD
C1 0046 Installation default ALL31(OFF)
C1 0046 Installation default ANYHEAP(16384,8192,ANYWHERE,FREE)
C1 0046 Installation default BELOWHEAP(8192,4096,FREE)
C1 0046 Installation default CBLOPTS(ON)
C1 0046 Installation default CELPSHPOP(OFF)
C1 0046 Installation default CHECK(OFF)
C1 0046 Installation default COUNTRY(US)
C1 0046 Installation default NODEBUG
C1 0046 Installation default DEPTHCONDLMT(10)
C1 0046 Installation default ENVAR("")
C1 0046 Installation default ERRCOUNT(20)
C1 0046 Installation default HEAP(32768,32768,ANYWHERE,KEEP,8192,4
C1 0046 Installation default HEAPCHK(OFF,1,0)
C1 0046 Installation default LIBSTACK(12288,4096,FREE)
C1 0046 Installation default MSGFILE(SYSLST)
C1 0046 Installation default MSGQ(15)
C1 0046 Installation default NATLANG(UEN)
C1 0046 Installation default RETZERO(OFF)
C1 0046 Installation default RPTOPTS(OFF)
  
```

(2) Cross Platform Solution development Approach with VisualAge Generator

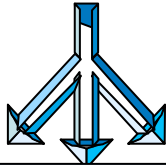
**Rapid
Development**



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

Generation

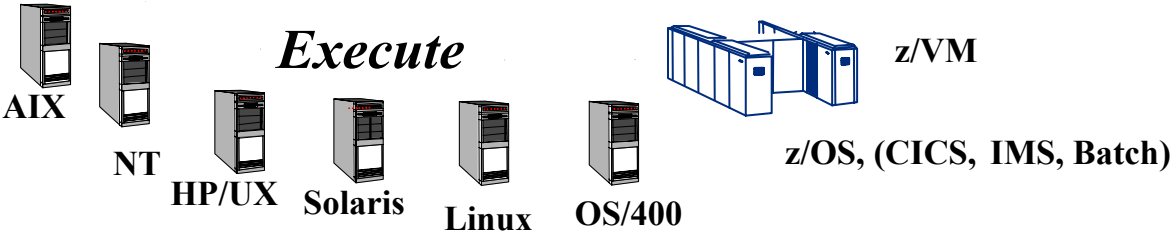
Generate



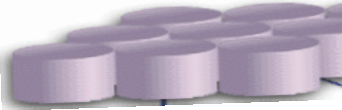
GUI, Java, HTML, C++, COBOL, PL/I

Execution

Execute



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



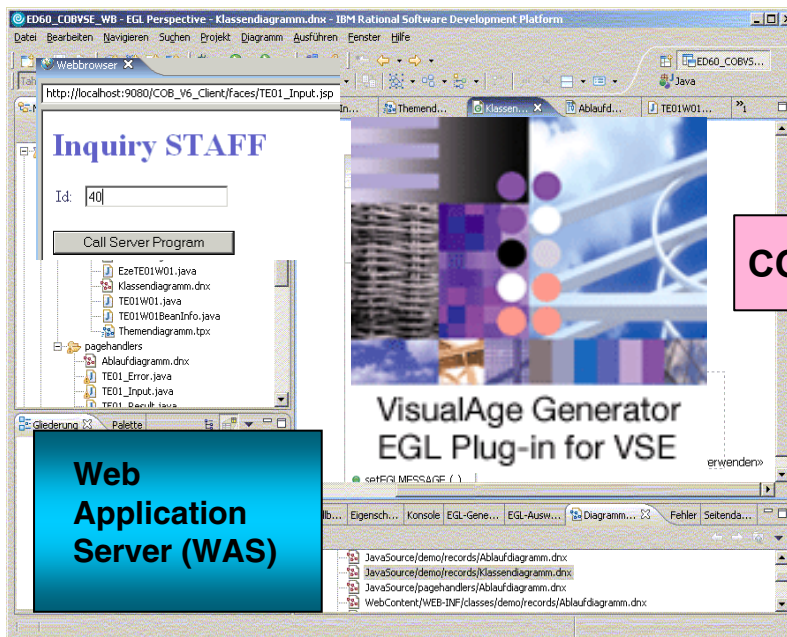
DB2 UDB VSAM ODBC
Oracle DLI, IMS/DB

(2) Cross Plattform Solution development Approach with VisualAge Generator

* **New:** VisualAge Generator EGL Plug-in for VSE *

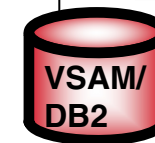
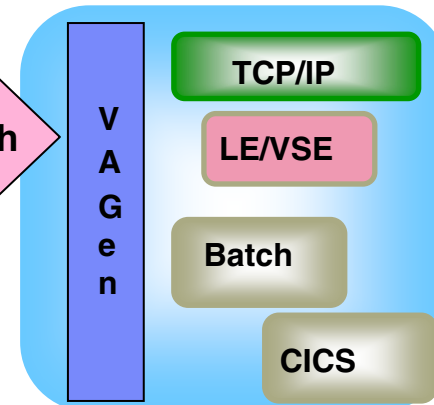
Rational Application Developer (RAD)

z/VSE Server



„Generate“

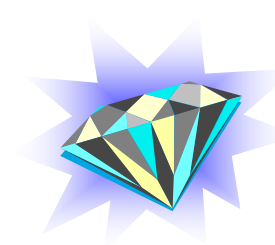
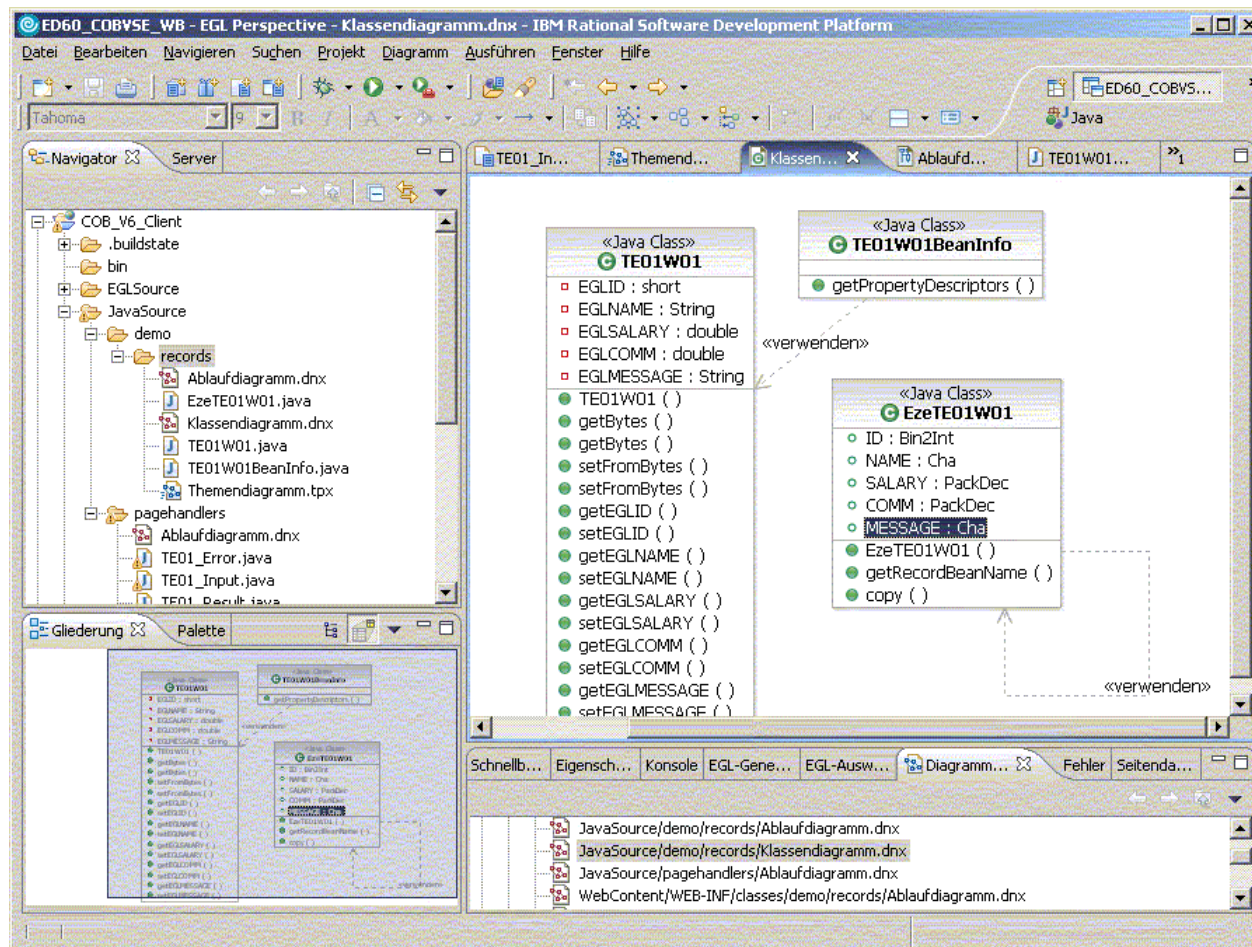
COBOL/CICS/batch



- Enterprise Generation Language (EGL), Visual Age Generator
- Java™ 2 Platform, Enterprise Edition (J2EE) connection Architecture (J2C/JCA)
- Java Server Pages (JSP), dynamic result page known by the Web Application Server (WAS)

Rational Application Developer (RAD)

Integrated Development Environment (IDE)



Functionality for Enterprise Development

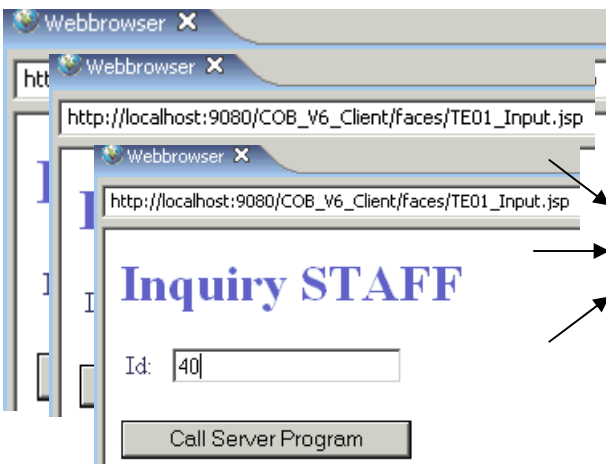
- **Additional perspectives**
EGL ...
- **Migration Assistance:**
EGL V6 Migration, VisualAge Generator Migration
- **Control Windows/Views**
EGL generation, SQL errors ...
- **Additional developer tools:**
e.g. page designer, web site designer, portal tools, service data objects, XML tools, UML Visual Editor etc.

Tech-article: **IBM Rational Developer: Powerful support for rapid Java and J2EE development**

<http://www.ibm.com/developerworks/rational/library/dec04/parkin/>

Components for the 4GL runtime

Web Browser



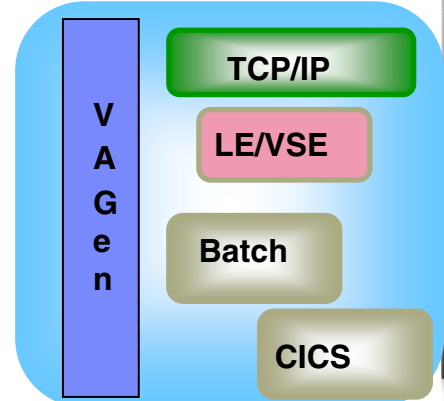
JSP front-end (n-times)

Web Application Server (WAS)

J2C Adapter

CICS Transaction Gateway (CTG)

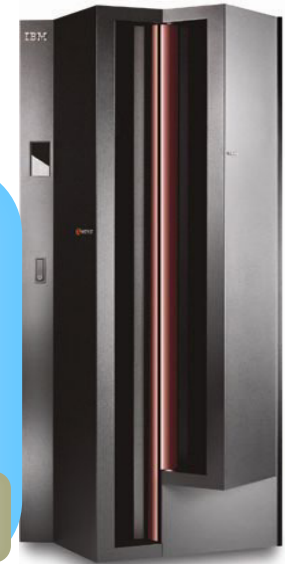
COBOL/VSE back-end



COBOL/VSE/CICS

VSAM/DB2

z/VSE Server



- Enterprise Generation Language (EGL)
- Java™ 2 Platform, Enterprise Edition (J2EE) connection Architecture (J2C/JCA)
- Java Server Pages (JSP), dynamic result pages in Web Application Server (WAS)

Types of generated Programs via EGL

➤ **VSE applications**

- CICS applications,
 - including the Compile/Link Jobs and CICS definitions
- batch applications
 - including Compile/Link Jobs
- **It's very easy to switch the data access method (i.e from VSAM to SQL)**

➤ **Web applications:**

- Standalone (without access to VSE)
- With access to Core applications (Core existing CICS, or EGL generated)

➤ **Distributed Applications**

- Mixed applications with a client part and a VSE part in COBOL

Program generation with 4GL

➤ **Who may consider exploring EGL solutions?**

- All developers with the need to implement „Business Logic“ and want to be platform independent
- Especially for: Databases, Java-, Host-, VisualAge Generator Developer

➤ **What are the changes in the development process**

- Specialized knowledge in Programming languages is obsolete (COBOL, Java ...)
- The focus is on the EGL-Language and build descriptors
- Coding and maintenance is done in EGL, not on the generated Programs !
- The data access method is defined in EGL and can be switched easily (i.e. „indexedRecord“ (VSAM KSDS), „sqlRecord“ for SQL)

A 'Common' Development environment !



Eclipse is the base !

Conclusion

- **Make use of the e-business infrastructure available in z/VSE for AD**
 - VSE Connectors, Solution Scenarios“ (→ z/VSE home) z/VSE Home → Downloads → Tools
- **Check the possibility and advantage of platform independent deployment (especially new applications ... i.e. with target environment: Linux)**
 - WSAD-/RAD-based development can be host-oriented and relieve it
 - EGL has different possibilities to generate server programs
 - Flexibility and a modern Solution Landscape is the result
- **Avoid unknown risks in ,total‘ migrations**
 - Avoid ‘big-switch‘ changes, from today's robust solutions, the result is often unpredictable
 - functionality in core applications is often undocumented and therefore hard to be recreated without the whole picture of dependencies
 - Modern solution can often be developed as enhancement to proven existing solutions, with affordable effort
 - The main business processes should be the main path for solution enhancements (rather than modern techniques only)
- **Where traditional development makes most sense it should be kept**
 - The host environment has special services (i.e. Assembler driver, macros, program-techniques), which might not be usable in other development environments – modern tools can help

Rational Application Developer (RAD)

- **Overview RAD for WebSphere Software**
<http://www.ibm.com/software/awdtools/developer/application/index.html>
- **Download RAD V6001**
<http://www.ibm.com/support/docview.wss?uid=swg24009346>
 - <http://www.ibm.com/developerworks/downloads/r/rad>
- **Rational Software downloads**
 - <http://www.ibm.com/developerworks/websphere/downloads/plugin/>
- **Rational Technical Library**
 - <http://www.ibm.com/developerworks/rational/library/>
- **Rational Technical Resources + Best Practices**
 - <http://www.ibm.com/developerworks/rational/>
- **IBM Software Products**
 - <http://www.ibm.com/software/sw-bycategory/subcategory/SW740.html>

Enterprise Generation Language (EGL)

- **Visual Age Generator**

- <http://www.ibm.com/software/awdtools/visgen>

- **Program Directory (includes setup prerequisites ...)**

- <http://www.ibm.com/software/awdtools/visgen/library/v45docs.html>

- **Overall EGL**

- <http://www.ibm.com/developerworks/rational/products/egl/>

- **EGL Language Resources (check for latest references - V6 level)**

- <http://www.ibm.com/developerworks/rational/library/egldoc.html>

- **Samples / Practice**

- **EGL integration with Java using Rational Application Developer V6**

- http://www.ibm.com/developerworks/rational/library/05/510_java/#download

- **Generating COBOL using EGL and JSF with WebSphere Studio Enterprise Developer**

- http://www.ibm.com/developerworks/websphere/library/techarticles/0502_barosa/0502_barosa.html

- Note: target system in this sample is not z/VSE 3.1 but can be customized !

- It is recommended to use RAD V6 instead WSED !

- **Generating Java using EGL and JSF with WebSphere Studio Site Developer V5.1.2**

- http://www.ibm.com/developerworks/websphere/library/techarticles/0408_barosa/0408_barosa.html

z/VSE Additional Information

- z/VSE Home Page
<http://www.ibm.com/servers/eserver/zseries/zvse/>
- z/VSE Solutions and Utilities
<http://www-1.ibm.com/servers/eserver/zseries/zvse/solutions/>



- 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 *SG24-5997-00*
- ***Handbook For WebSphere 5*** ***SG24-7042***
(Connectors to z/OS and VSE)

We appreciate your comments on z/VSE: zvse@de.ibm.com