Approaches to Application Development for z/VSE

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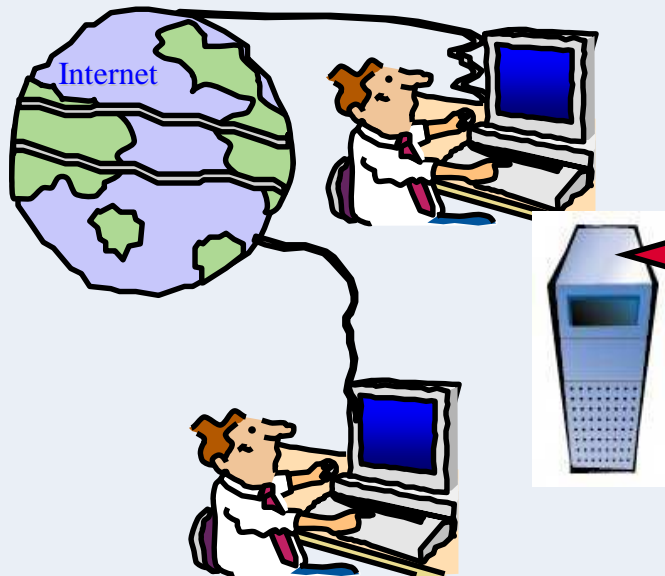
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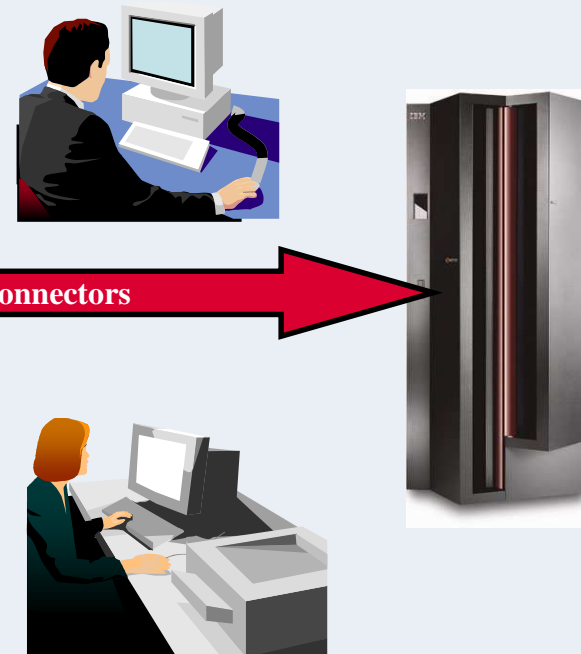ACUCORP is a registered Trademark of ACUCORP Corporation

IT environments and their challenge

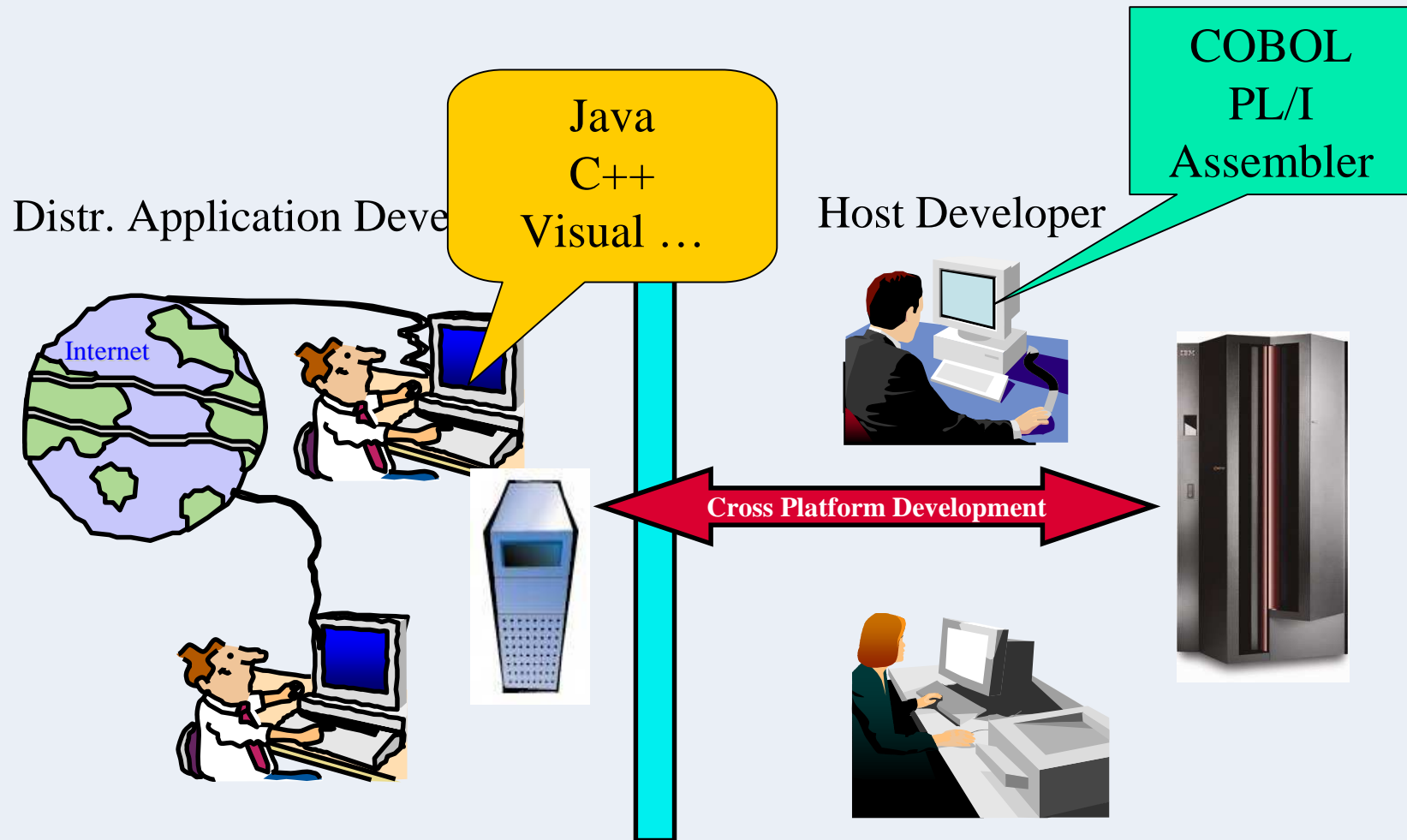ƒ **Two IT worlds want a common solution**
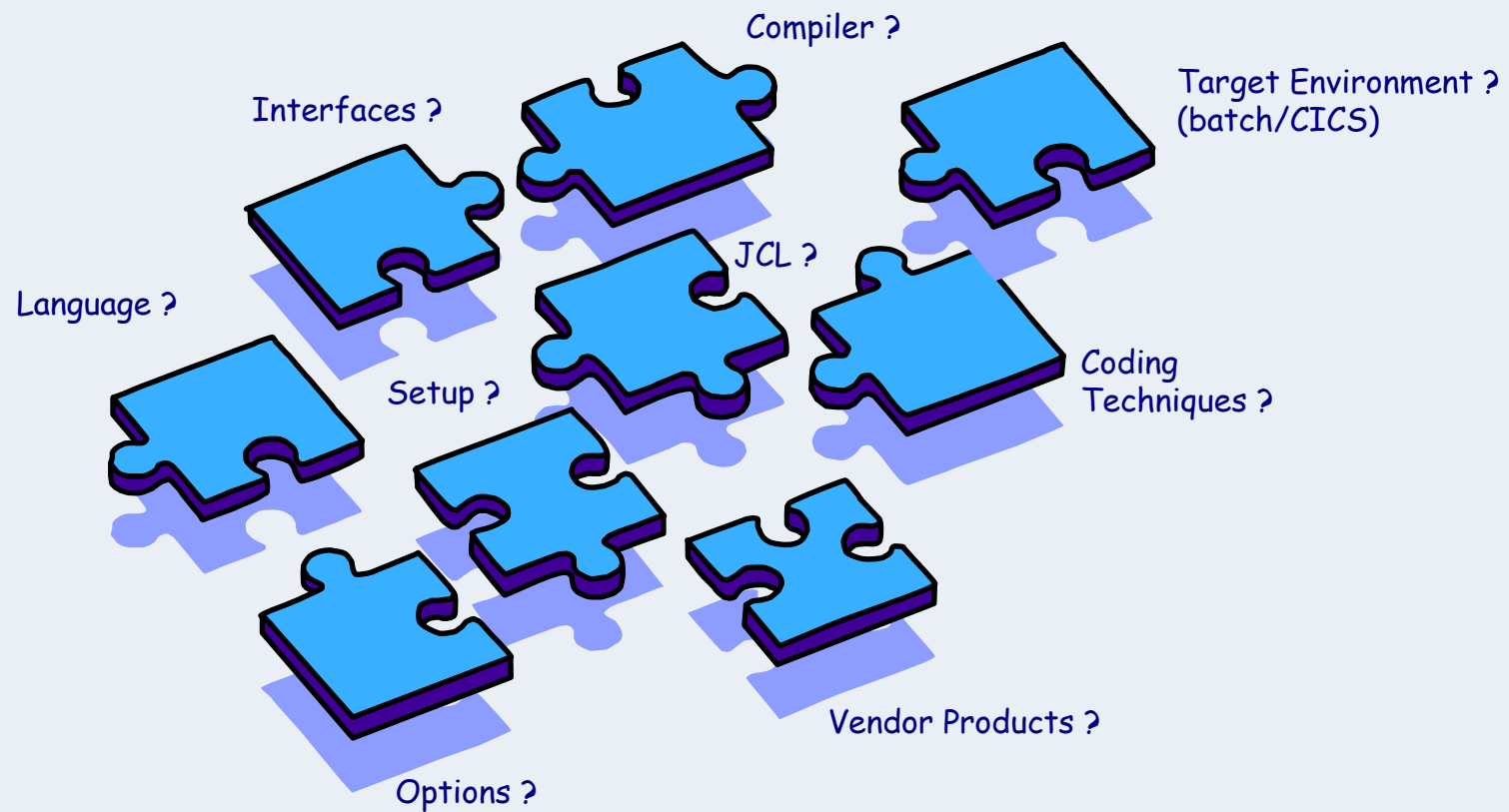
Distr. Application Developer

Host Developer

Internet

Connectors

'Distributed' Development Landscape…

COBOL
PL/I
Assembler

Distr. Application Deve

Java
C++
Visual …

Host Developer

Internet

Cross Platform Development

Native VSE Application

- **Typical interdependencies ...**

VSE Application

Compiler ?

Interfaces ?

Target Environment ?
(batch/CICS)

JCL ?

Language ?

Setup ?

Coding
Techniques ?

Vendor Products ?

Options ?

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.

Goals of today's IT

- **Optimization of Development**
  - **performant, less resources**

- **Omit redundancies**
  - **optimize processes**

- **Reduce IT complexity**
  - **efficient data flows and data stores**
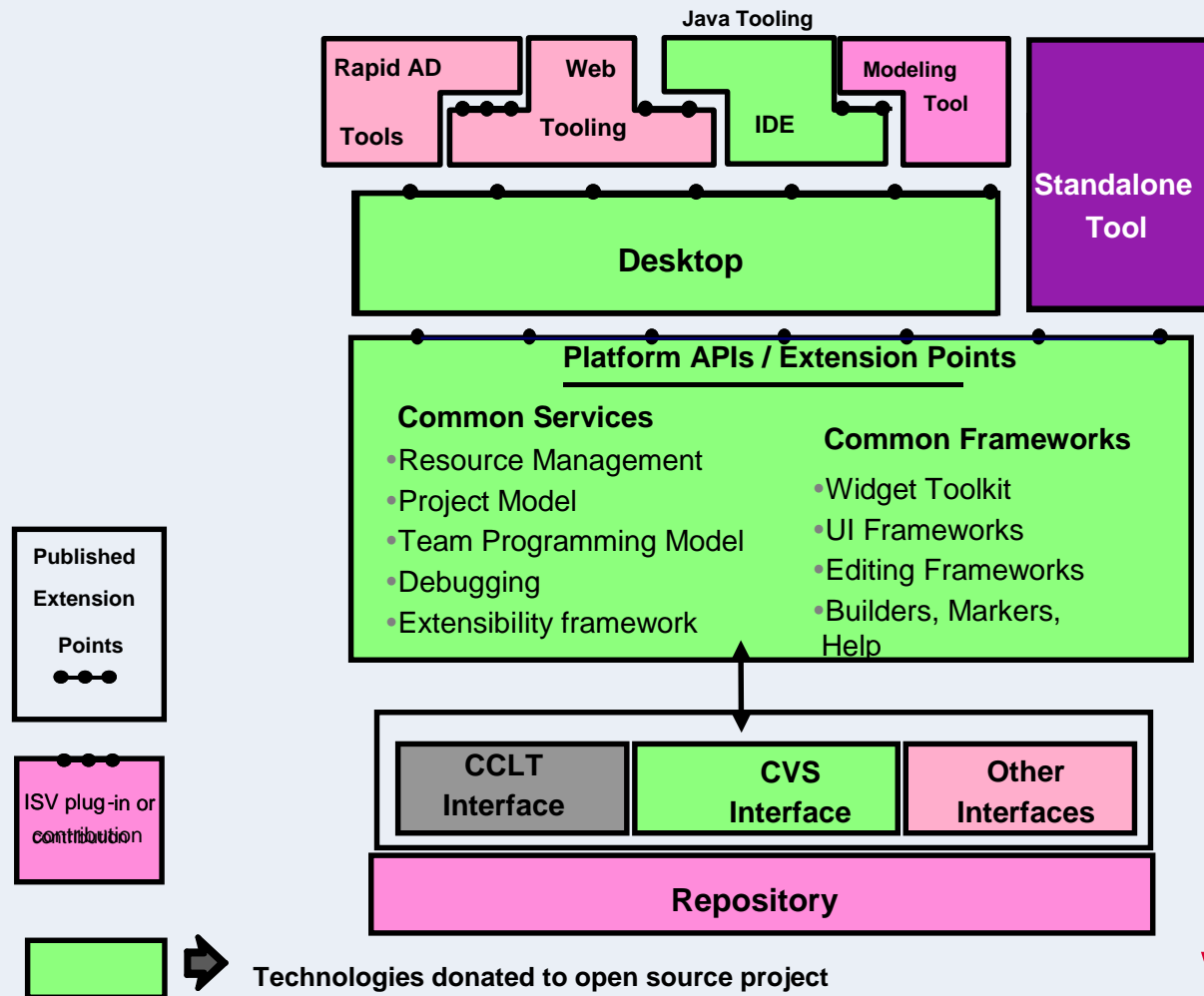
VSE Development options

Existing applications

1) New Interface – develop graphical interfaces (in Java)

2) Modern access - modern applications access z/VSE via Connectors.

New Applications for VSE

1) Cross-Platform solution development environments (i.e. 4GL Methods)

2) Modern development tools for existing code (i.e COBOL, PL/I, ASM)

Open source – Eclipse - is the base

Modern development environment !

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www.eclipse.org

Existing and new Applications
(1) Modernize – Develop graphical interfaces – in Java

PC/Workstation Front-End Development

z/VSE Server

TN3270

TCP/IP

LIBR Power console

DL/I

ICCF

VSAM

CICS TS

DB2

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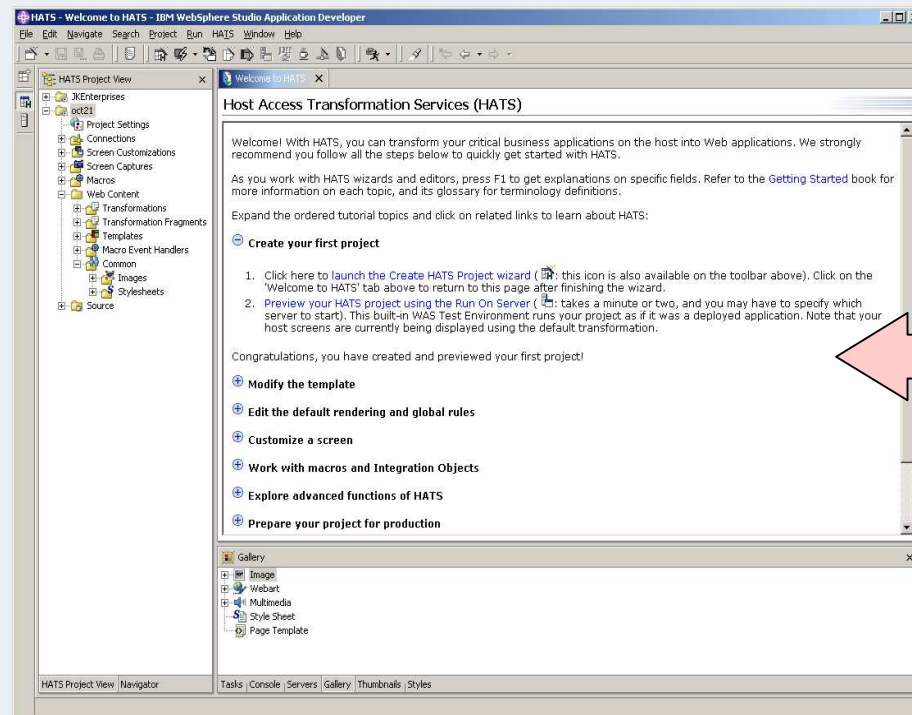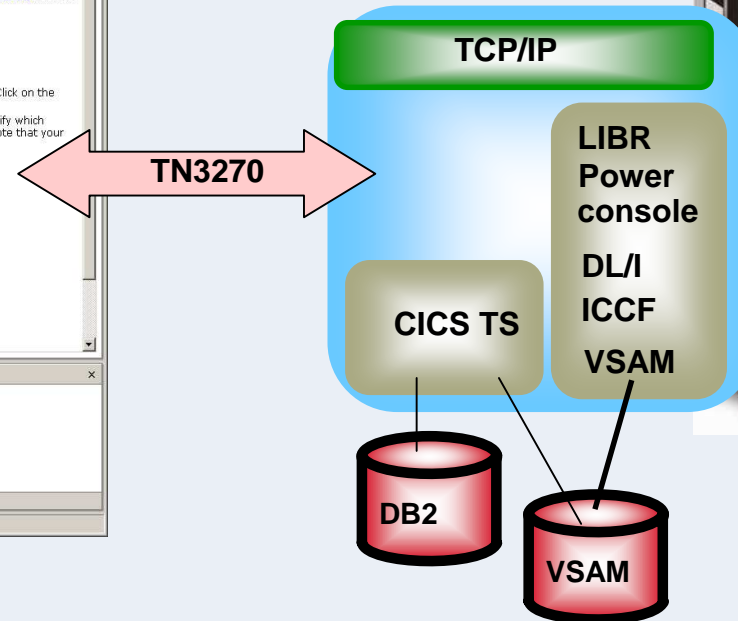
- **Application-Development – in Java** (i.e. HATS Studio or Eclipse)
- The new application accesses unchanged VSE application and data
- the new application is a web application using internet technologies

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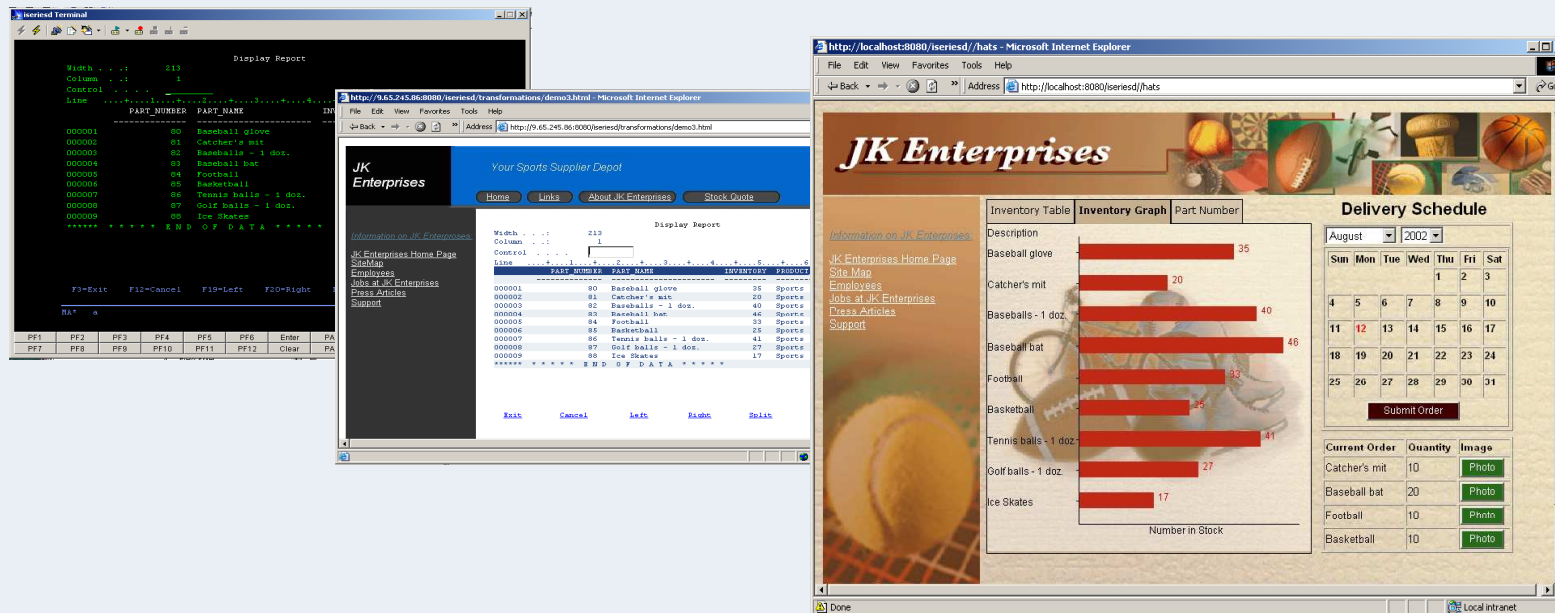
Benefit: Easily extend existing applications to the web

HATS Advantages:

- Combine / Integrate

Existing and new Applications

(1) Access – Modern applications access z/VSE – in Java

Rational Application Developer (RAD)
WebSphere Developer for System z
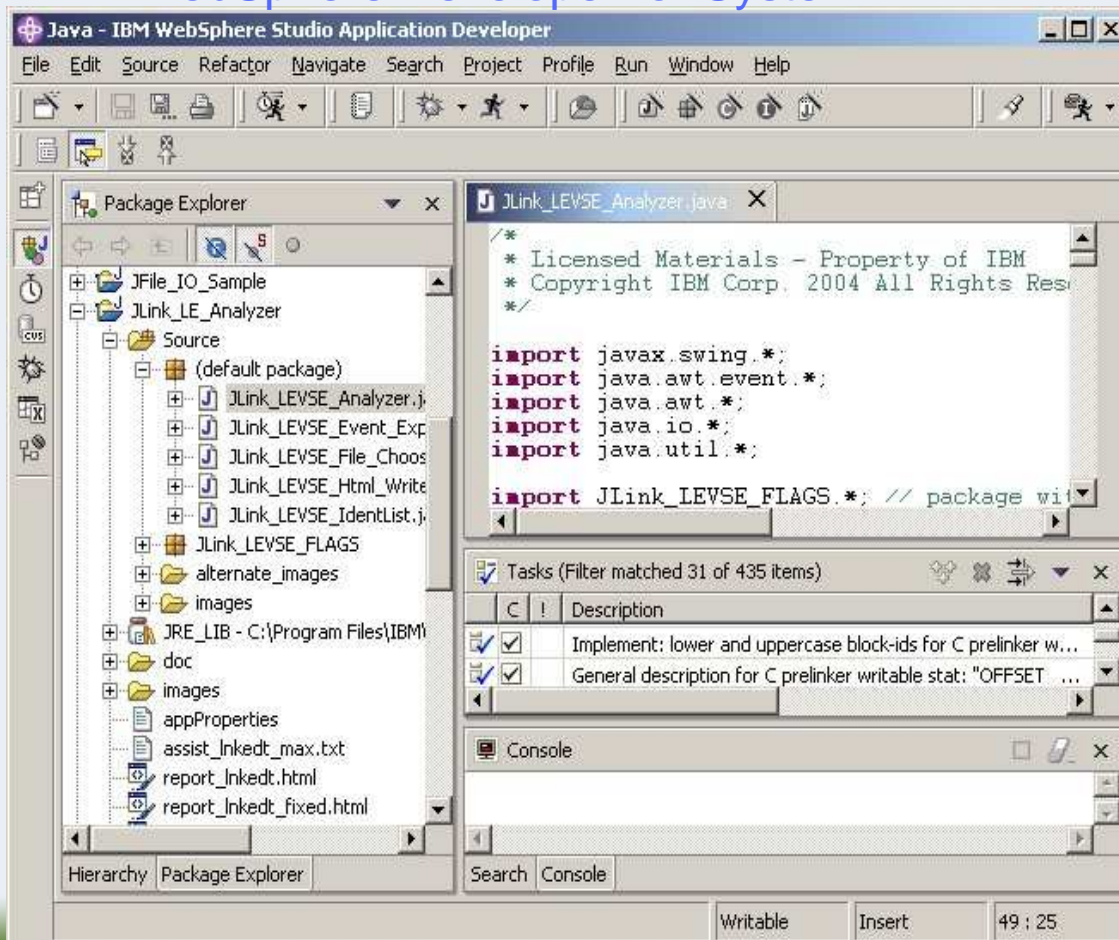
Based on the eclipse platform

http://www.eclipse.org
Open architecture for integrated
Web- & application development.
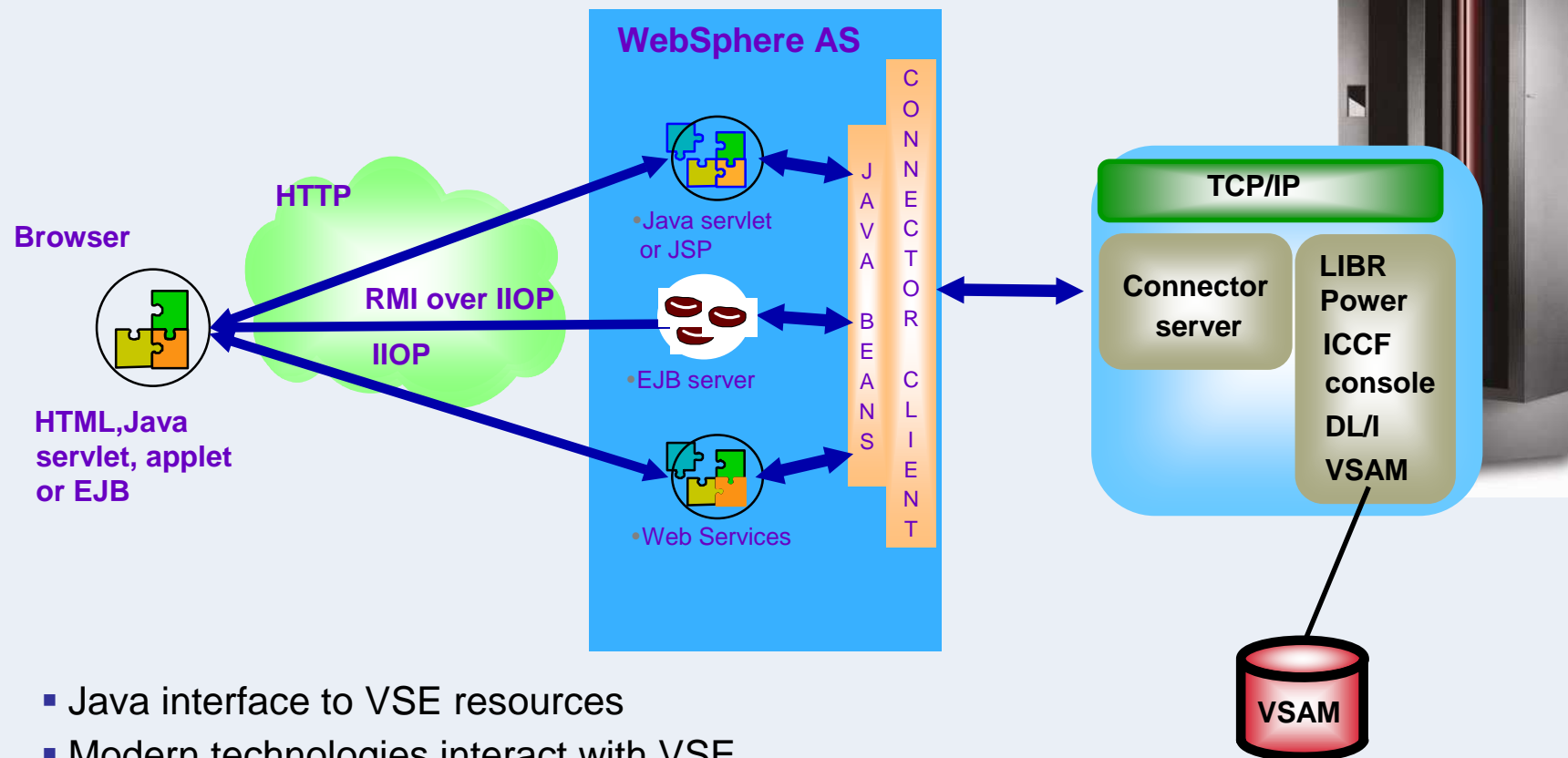Supports the plug-in model

- ➢ **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**

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

Web Client

z/VSE Server

Browser

HTML,Java servlet, applet or EJB

HTTP

RMI over IIOP

IIOP

WebSphere AS

•Java servlet or JSP

•EJB server

•Web Services

J A V A   B E A N S

C O N N E C T O R   C L I E N T

TCP/IP

Connector server

LIBR Power ICCF console DL/I VSAM

VSAM

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

VSE Development options

Existing applications

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New Applications for VSE

1) Cross-Platform solution development environments (i.e. 4GL Methods)

2) Modern development tools for existing code (i.e COBOL, PL/I, ASM)

Open source – Eclipse - is the base

IBM ®

**IBM Developer tools
based on Eclipse technology**

- **BPEL**
- **Business Process Modelling & Integration**
- **Human Workflow support**
- **Service Aggregation**
- **Business Rule Beans**

- **z/OS Application Development**
- **XML Services for the Enterprise**
- **Service Flow Modeler**
- **BMS Map Editor**
- **COBOL and PL/l**

**+ (1)VSE Develop. Plug-In
+ (2)VSE EGL Plug-In for COBOL Generation**

WebSphere Integration Developer

WebSphere Developer for System z

Rational Application Developer

Rational Web Developer

Eclipse

- **Web Development**
- **Web Services Development**
- **Rich Client Development**
- **XML & Database Tools**
- **4GL Development**

- **J2EE/EJB & Portal Development**
- **Component Testing**
- **Code Review & Runtime Analysis**
- **UML Visual Editors**
- **Configuration Management**

+ VSE EGL Plug-In for COBOL Generation

(2)Cross Platform development
Approach with VisualAge Generator

Rapid

Development

Develop
Test

IBM 4GL history:

CSP (~1981) -> VAGen (~ 1994) -> EGL/ WSED (~2003)

Migration-Options available ...

Generation

Generate
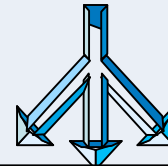
Execution

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

z/VSE(CICS, Batch)

Execute

z/VM

AIX

NT

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**
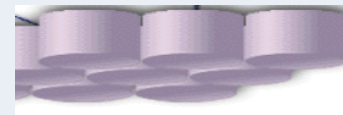
DB2 UDB **VSAM** **ODBC**

Oracle **DLI, IMS/DB**

(1)Cross Plattform Solution development
Approach with VisualAge Generator

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

Rational Application Developer (RAD) or
WebSphere Developer for System z (WDz)

z/VSE

Web Application Server (WAS)
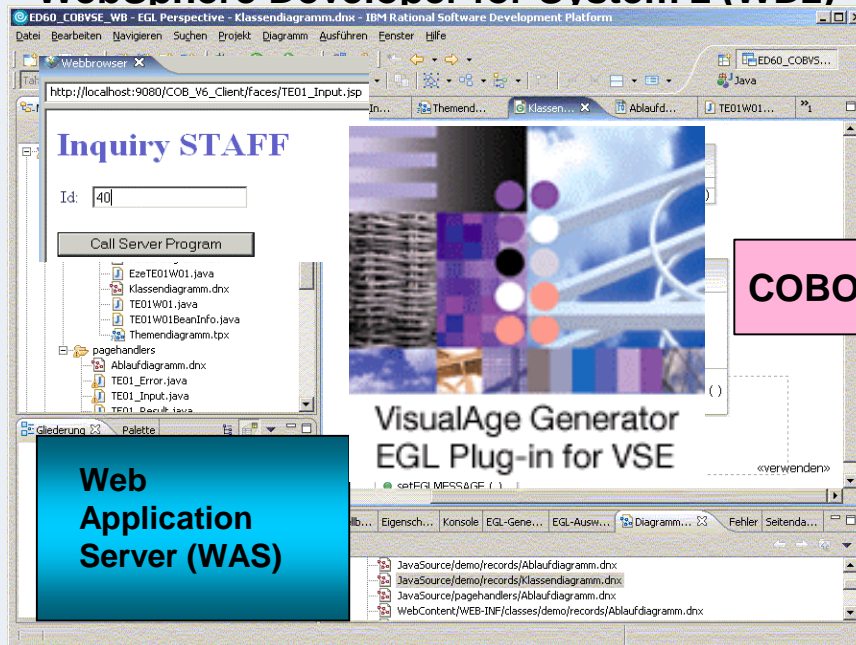
„Generate"

COBOL/CICS/batch

V A G e n

TCP/IP

LE/VSE

Batch

CICS

VSAM/ DB2
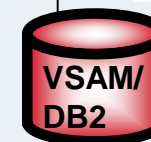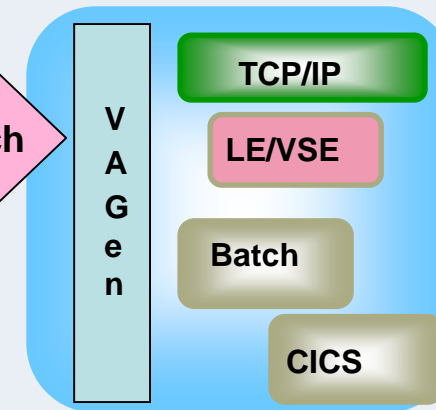
- Enterprise Generation Language (EGL), Visual Age Generator
- Java™ 2 Platform, Enterprise Edition (J2EE) connection Architecture (J2C/JCA)
- Java Server Pages (JSP), dynamic result page known by the Web Application Server (WAS)

Components for the 4GL runtime

Web Browser

z/VSE Server

COBOL/VSE back-end

http://localhost:9080/COB_V6_Client/faces/TE01_Input.jsp

http://localhost:9080/COB_V6_Client/faces/TE01_Input.jsp

Inquiry STAFF

Id: 40

Call Server Program

Web Application Server (WAS)

J2C Adapter

V A G e n

TCP/IP

LE/VSE

Batch

CICS

JSP front-end (n-times)

COBOL/VSE/CICS

CICS Transaction Gateway (CTG)

VSAM/ DB2
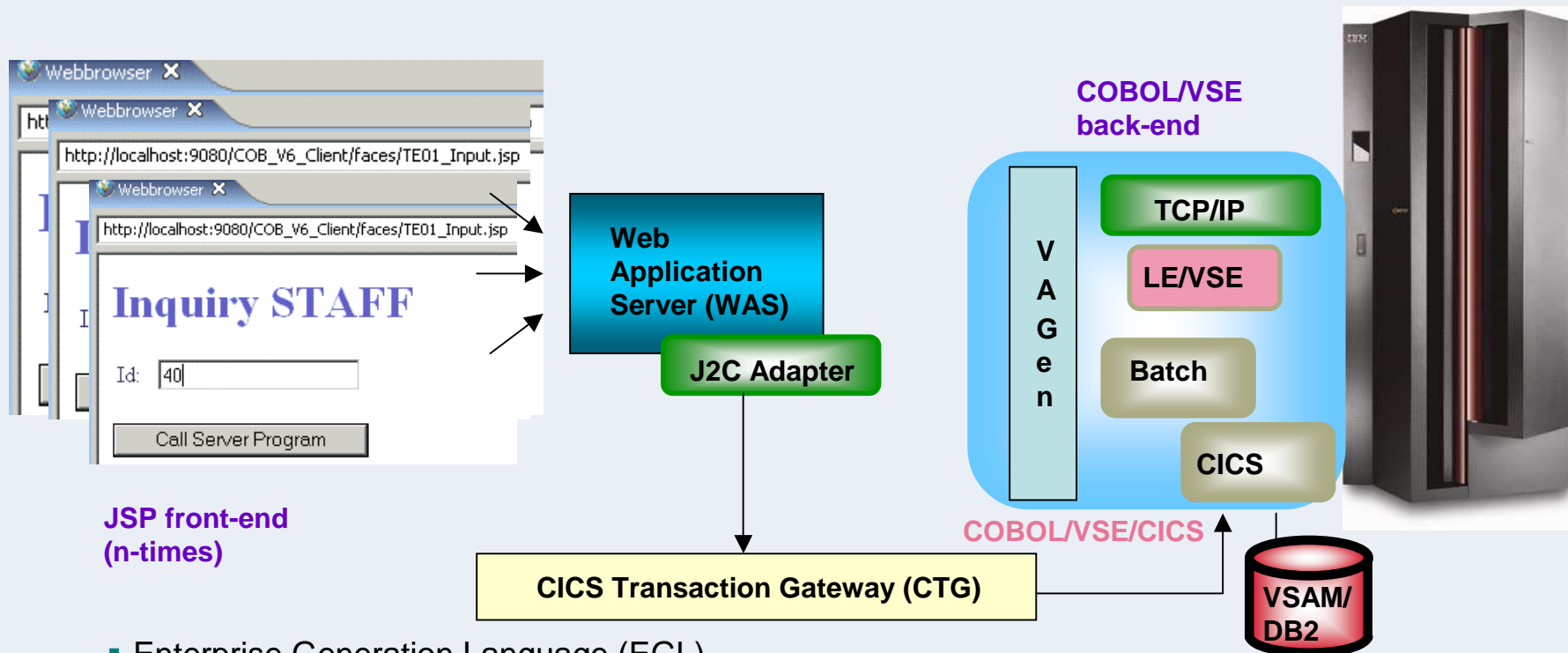
- Enterprise Generation Language (EGL)
- Java™ 2 Platform, Enterprise Edition (J2EE) connection Architecture (J2C/JCA)
- Java Server Pages (JSP), dynamic result pages in Web Application Server (WAS)

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**

(1)Cross Platform Integrated Development Environment
Approach with WDz - WebSphere Developer for System z
and the z/VSE Plug-In

NEW !

from Q-Group

(2) Modern Development tools for existing Code

- **Develop a z/VSE project**

z/VSE local and remote Compile

z/VSE Syntax checking and highlighting

A 'Common' Development environment !

Eclipse is the base !

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/

Redbooks

- 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