IBM WebSphere Host Access Transformation Services (HATS)

HATS V7 Summary

WebSphere® software

Agenda

- Why reuse?

- Customer Challenges

- What is HATS?

- Benefits of HATS

- How HATS works

- What's new in V7

- Packaging

- Successes

- Other

The Reality of Existing Applications

- 200 billion lines of COBOL code exist today

- 5 billion lines are added each year

- Similar inventory for PL/1 and RPG code
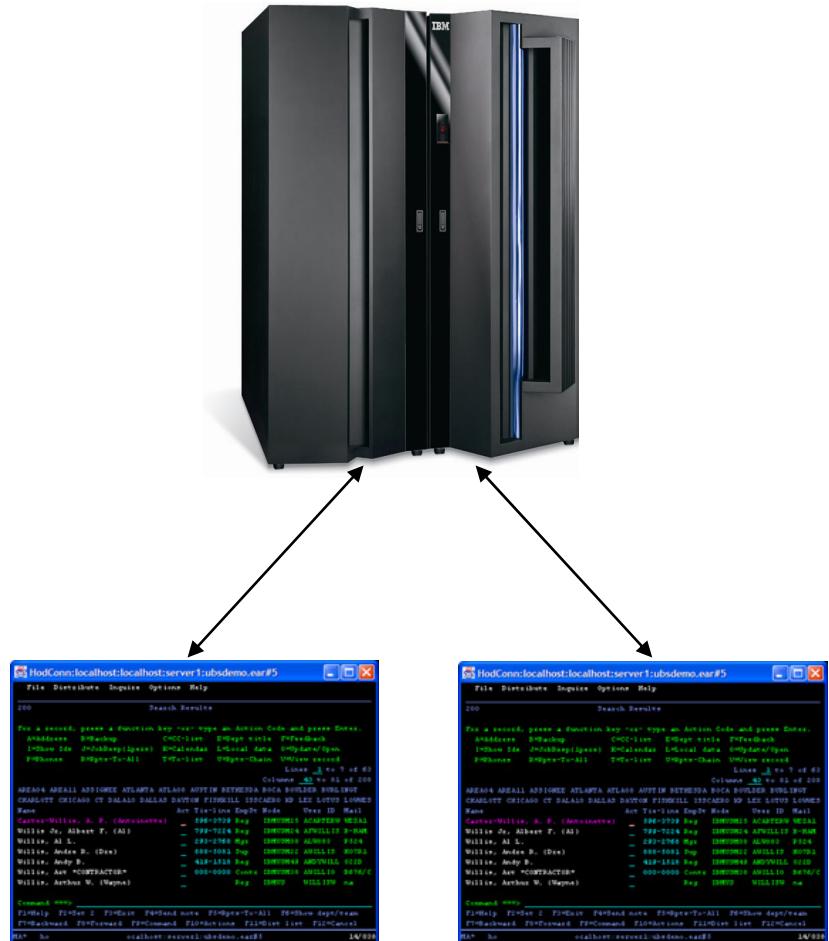
- A typical mainframe customer has…

  - 30M lines of COBOL code

  - Worth $600M

  - Automating 100,000 business processes

- 70-80% of mainframe applications are terminal based

Banking, Insurance, Government, Manufacturing, Travel and Transportation, Distribution and Retail, Media, Utilities, Healthcare Industries
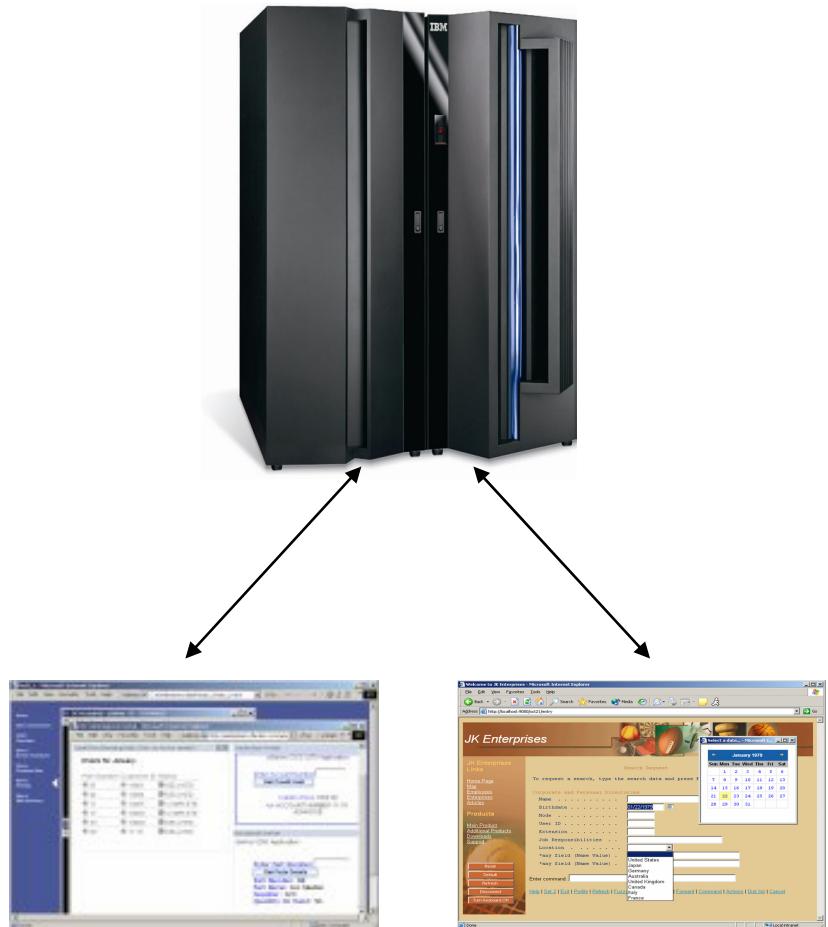
Value of Existing Applications

- Existing applications are among the most valuable assets a company owns

  - Fully functional applications that run the business today

  - Significant investments over the years

  - Fine-tuned for dependable optimal performance

  - Run within fine-tuned reliable, robust, scalable IT infrastructure and platforms

- Accessed via character / text based terminals

  - Non-intuitive, difficult to navigate user interfaces

  - Difficult to integrate in modern business processes
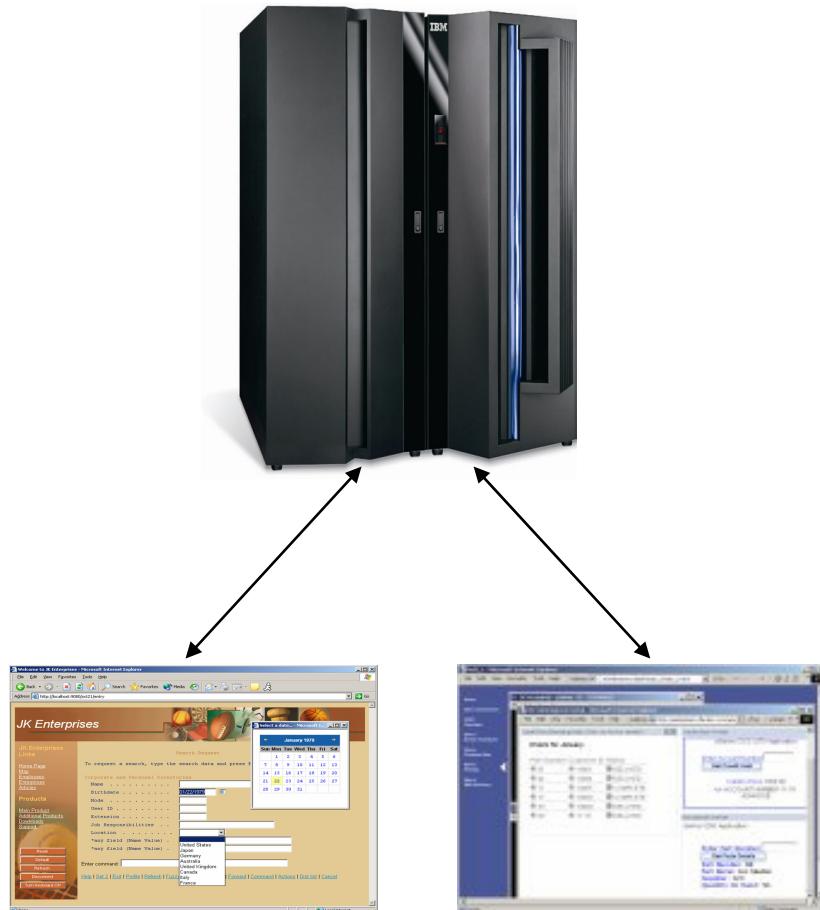
Challenges and Customer Requirements

- **Improve the appearance of user interfaces**

  – Reduce learning curve for newer employees

  – Extend to new departments, new business partners, new end-user customers, who rely on web application ease-of-use

- **Improve employee productivity by streamlining application flow**

  – Automate where appropriate - eliminate unnecessary keystrokes and screen navigations

  – Customize access for a specific set of users

Challenges and Customer Requirements
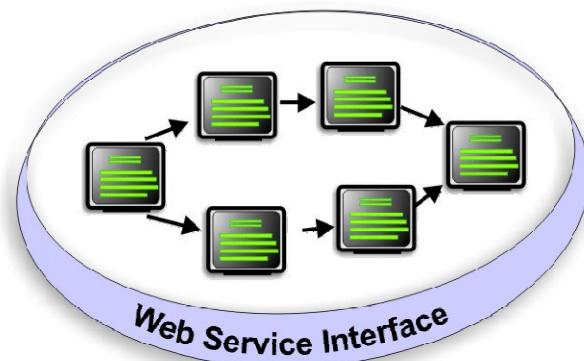
- **Eliminate or reduce administration and maintenance of installed client software**

    - IBM or 3rd party 3270 or 5250 emulation client SW packages

    - Browser is universally available without dependence on HW/SW

- **Build new service-oriented applications that better suit current business processes**

    - Combine business logic and data from existing host applications with new business logic to build a unified application

Customers want to do all this while minimizing changes to existing applications.

What is Host Access Transformation Services?

- HATS gives you the tools you need to quickly and easily create Web, portal or rich client applications that provide an easy-to-use GUI for your green-screen

  – Automatic transformation

  – Low skills requirement

  – Rules-based

  – Highly customizable

  – Iterative development process

- Extends terminal application tasks as Web Services

Host Access Transformation Services

Rich Client

- Modernize and streamline "green screen" applications

- Combine data from multiple screens, applications and databases

- Non-invasive

- Integration at the desktop with other Eclipse applications

- Client side processing

- Rich set of user interface widgets

- Built on the standard, open Eclipse foundation

- 3270e print directly to end user's printer

Web

3270 or 5250 Data stream

Portal

Web Service
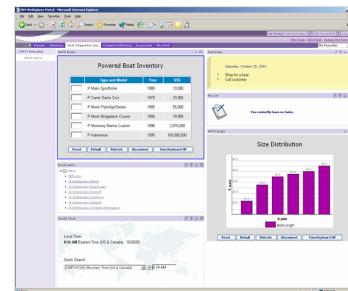
- Build self-service transactions

- Integration at the glass

- Click-to-Action support
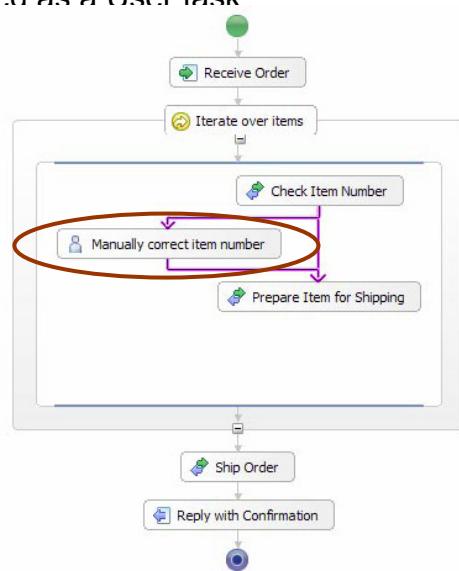
- Zero footprint

- View through your favorite browser

HATS and SOA Entry Points

- The Process business entry point to SOA - HATS participate in the Business Process

  – insert an automated HATS Web service in your business process

  – tasks that are not automated using HATS programmatic services may be implemented as a User task
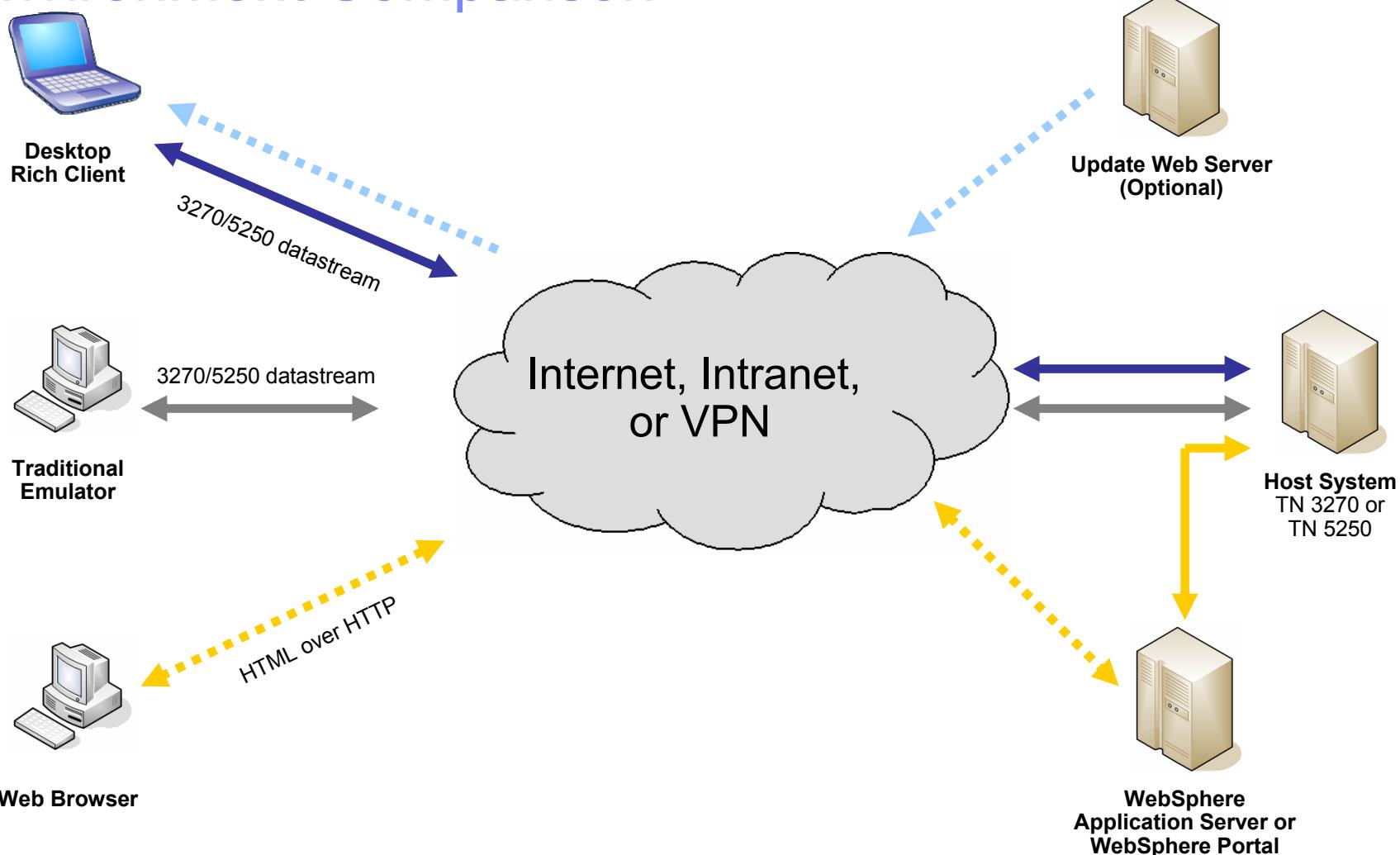
- The People business entry point to an SOA – Present host information as a portlet

  – aggregate applications and content and deliver them as role-based applications

  – tailor host apps to different user roles as portlets

  – present multiple host apps on the same page with business, productivity, and collaboration portlets

Environment Comparison

Persistent ◄─────►

Non-persistent ◄┈┈┈┈►

Desktop Rich Client

3270/5250 datastream

Traditional Emulator

3270/5250 datastream

Web Browser

HTML over HTTP

Internet, Intranet, or VPN

Update Web Server (Optional)

Host System
TN 3270 or
TN 5250

WebSphere Application Server or WebSphere Portal
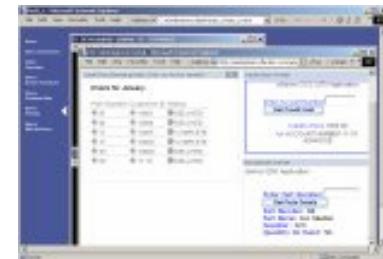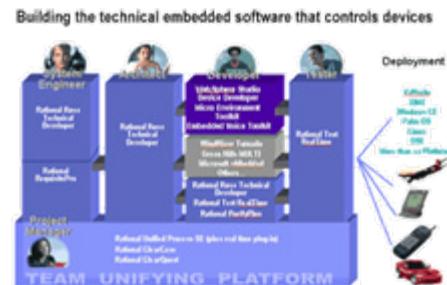
HATS Benefits

- **Increases productivity and reduces training costs as it extends host applications to the widest possible audience...**

  - by delivering HTML to Web browsers,

  - improving work flow from multiple applications,

  - and presenting host screens as familiar Web pages.

- **Quick ROI - Host applications can be quickly deployed to the Web...**

  - with green screens converted to GUIs according to HATS default rules...

  - and further customization added as time and resources permit.

  - low cost, no need to rewrite application

- **Low risk – Leverage Open, Proven Platform**

  - WebSphere Application Server leads the industry in market share.

  - HATS leverages the security, reliability, and scalability of the WebSphere Application Server and WebSphere Portal Server.

  - As well as the Eclipse-based open standards of the IBM Rational Software Delivery Platform tools.

 - Lotus Expeditor and Eclipse Rich Client

Industry-standard Architecture

- **IBM Rational Software Delivery Platform Tool**
  - HATS Toolkit is an Eclipse plug-in to the IBM Rational Software Delivery Platform Tool
  - Wizard-based
  - Creates HATS applications

- **WebSphere Application Server, WebSphere Portal Server**
  - HATS leverages WebSphere Application Server (WAS) or WebSphere Portal Server at runtime
  - HATS Toolkit creates J2EE .war and .ear files for deployment
  - HATS runtime is contained in the HATS application

- **Lotus Expeditor, Eclipse Rich Client, open, standards-based platform**
  - HATS Toolkit creates Eclipse features for deployment

Building the technical embedded software that controls devices
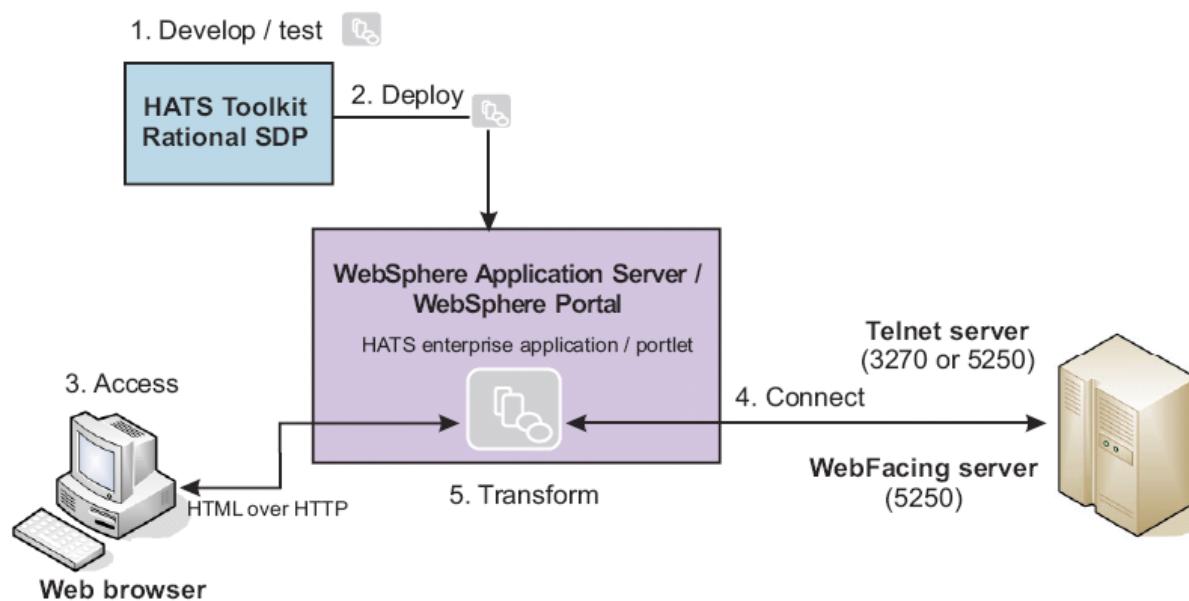
Improve Navigation & Productivity

- **Macros & Global Variables**
  - Skip unnecessary screens; combine screens; split screens, enter data on behalf of the end user
  - Store end user input as global variables to use again; prefill text entry fields

- **Improve User Interface with Screen Customization**
  - Add buttons, hot links, drop-down menus, valid value lists, etc.
  - Modify graphics, fonts, colors, and layout

- **Add business logic**

- **Local print support**

- **Native keyboard support**

- **Security – HTTPs, SSL**

- **Performance – HTTP Compression, Contention Resolution**

- **Supports iterative development**
  - Default Transformation rules - fully functional HATS application on the web quickly
  - Customize Default Transformation rules
 - Customize screens

Creating a HATS Web Application
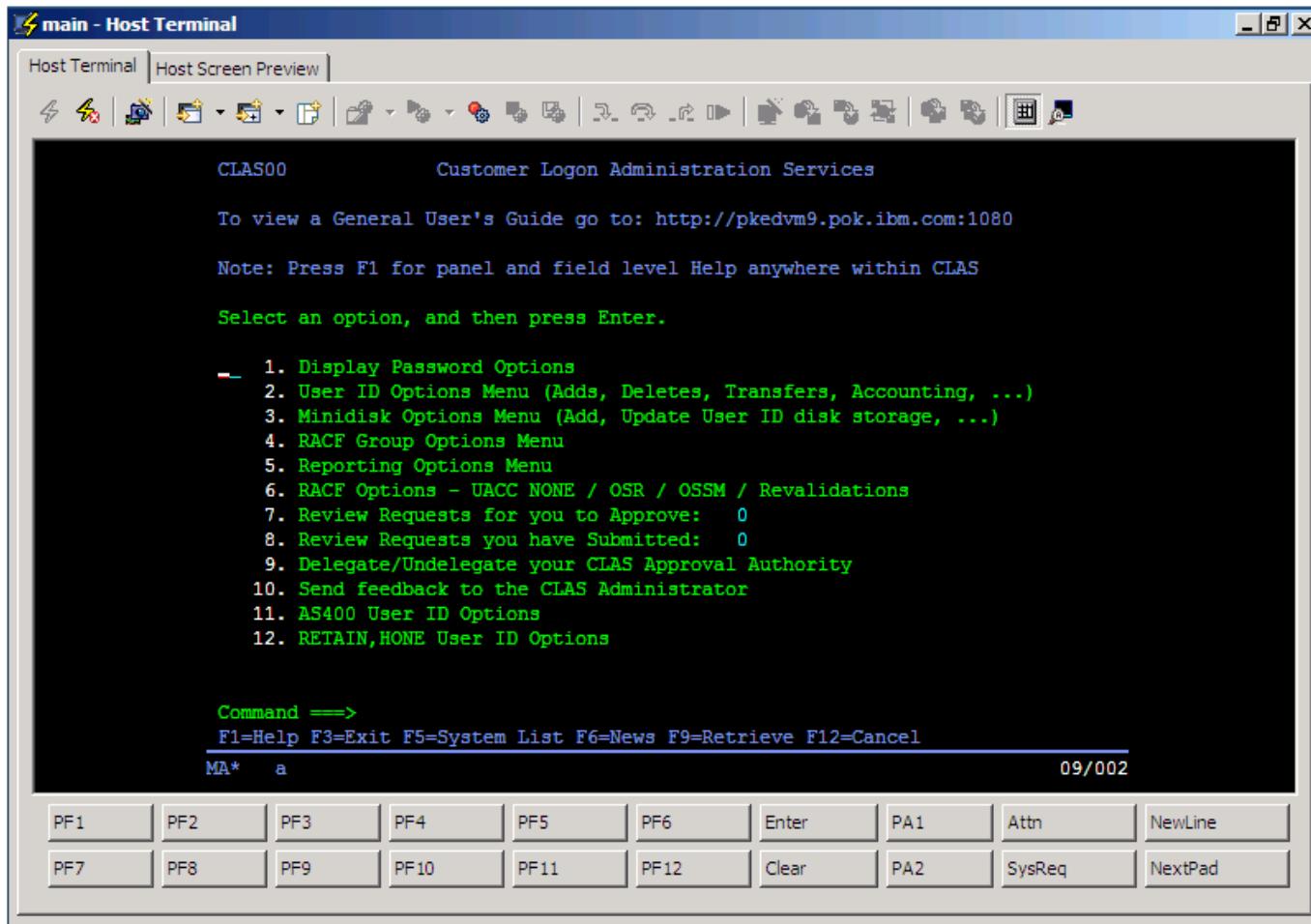
1. The developer uses the HATS Toolkit to develop and test a HATS Web application.

2. When ready, the developer deploys the HATS application by exporting it as a J2EE application and installing and running it on a WebSphere Application Server system.

3. Using a Web browser, the user accesses the HATS application.

4. The HATS runtime connects to the target host system through either a Telnet or a WebFacing server.

5. As the user interacts with the host through the HATS application, the HATS runtime transforms host screens to a GUI.
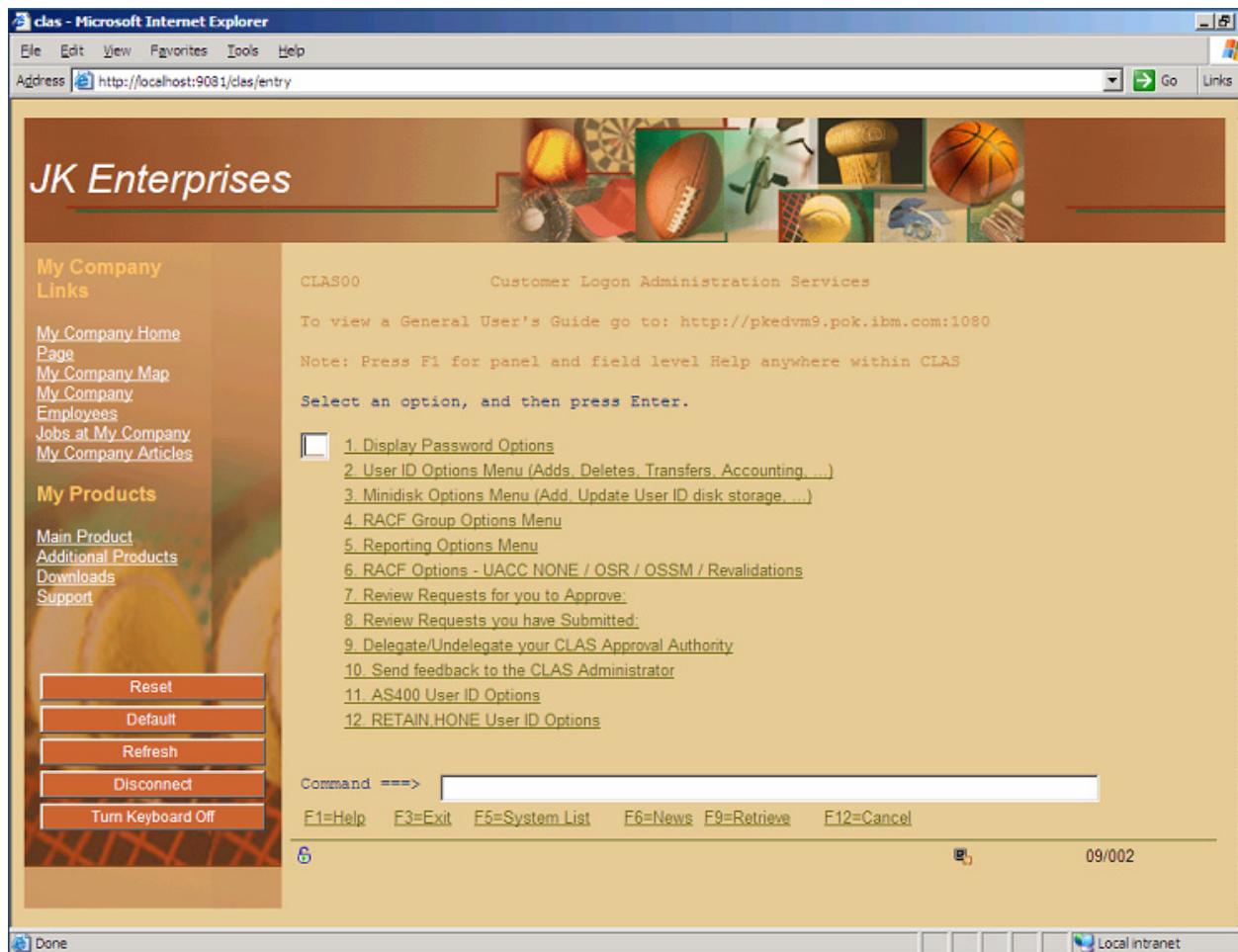
Defining your own rule set

- HATS Toolkit provides easy-to-use wizards for customizing how host components are displayed

- For HATS Web Application, import HTML from your Web page
  - Drag and drop HTML elements to create new customized template

- Use IBM Rational Software Delivery Platform or any industry-standard HTML editor to add:
  - Logos, graphics, backgrounds, Web links and other HTML elements

- Customizations are saved as reusable rule sets that can be applied to any host screens that share similar requirements

- HATS can apply:
  - an individual rule set to each host application
  - different rules sets to a single host application for different end user communities
  - the same rule set to multiple host applications

Traditional Green Screen

Transformation Using Default Rules

HATS Minor Modifications

Achieving a Green Screen Look with HATS
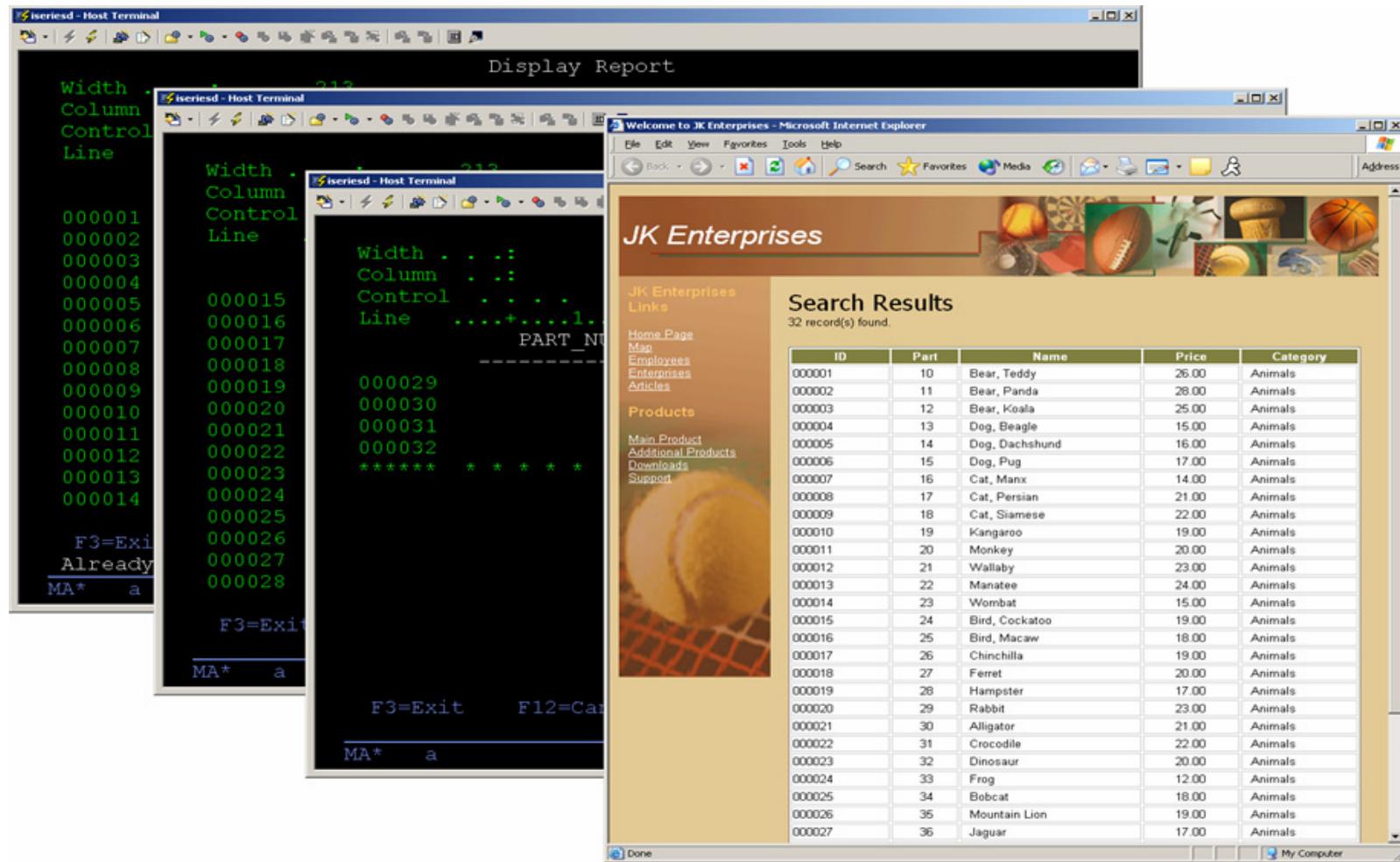
- **HATS supports host colors and extended field attributes, including:**
  - Numeric only, alphabetic only, signed numeric, reverse image, column separator, underline, and blink fields

- **Supports automatic field advance**

- **Host keypad and OIA can be displayed (and positioned anywhere)**

- **Native keyboard support (i.e. pressing F12 in the browser sends F12 to the host application).**

Achieving a Modern Web Look with HATS
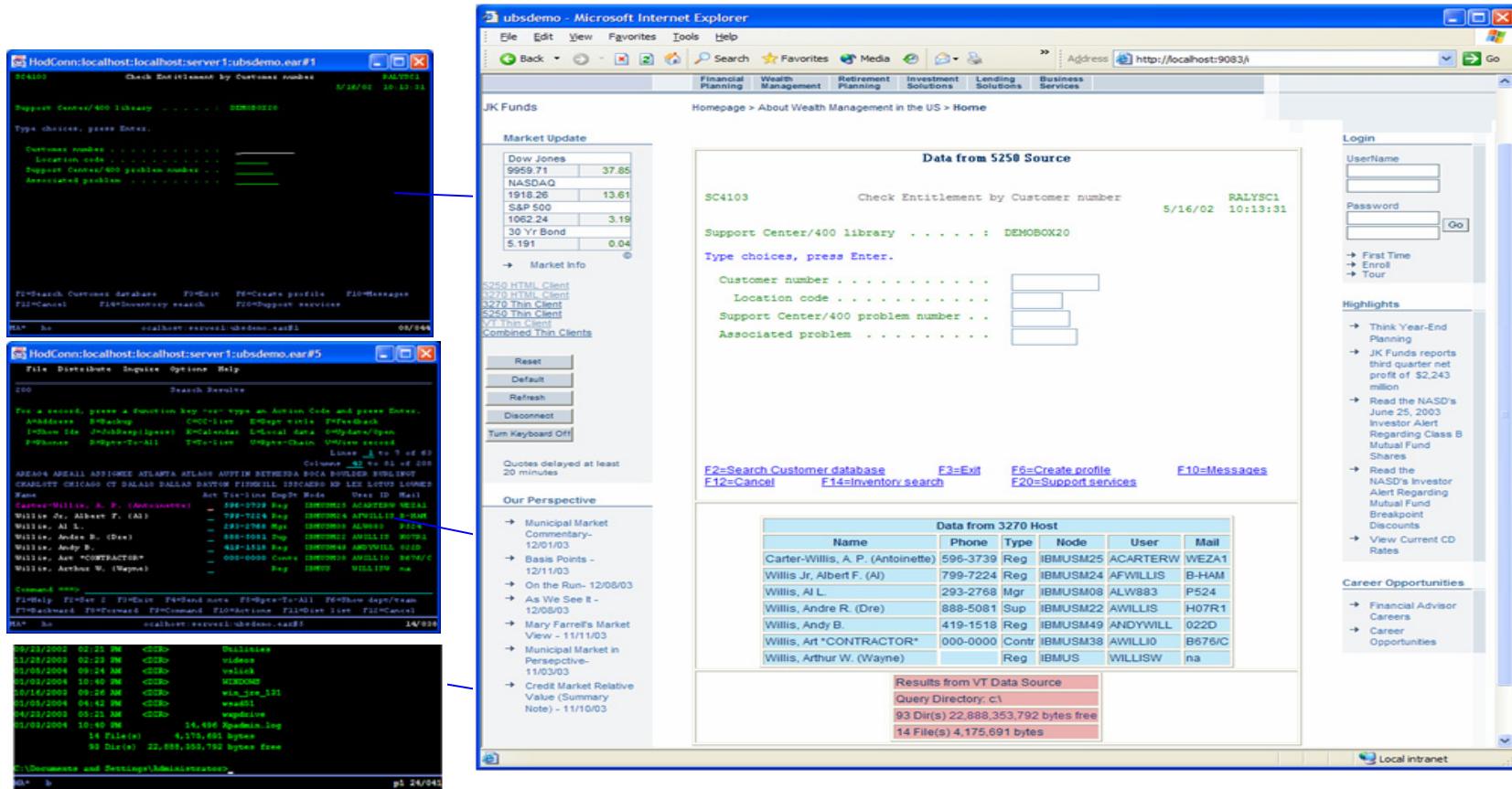
- **Customize screens with intuitive web user controls, including:**
  - Popup lists, drop-downs, checkboxes, lists, radio buttons, calendar popups, graphs, etc.

- **Simplify screens and work flow by**
  - Split one screen into multiple screens
  - Organize data in tabs
  - Remove functions / actions no longer needed by removing full screens or partial screens

- **One customized Web page can be applied to more than 1 host screen!**

Combining Screens

Combine and Integrate

HATS Customized Transformation

Global Rules and Valid Value Lists

Integration with WebSphere Portal

- **Aggregate applications and content and deliver them as role-based applications**

- **Tailor your host application(s) to different user roles as portlets**

- **Present multiple host applications on the same page with business, productivity, and collaboration portlets**

- **HATS supports:**
  - Click-to-Action
  - Credential Vault with
  - Single Sign-On

HATS Single Sign-On Support (Web & Portal)

- **Increases Productivity**
  - No need to administer and maintain multiple host logon identities
  - Reduces password related support calls

- **HATS uses web credentials to retrieve existing network credentials from**
  - Tivoli Access Manager
  - Portal Credential

- **Extensible to any security package**
  - Developer may implement network security plug-in

- **HATS maps network credentials to host credentials**
  - DCAS/JDBC plug-in – Store network credentials to host ID mapping with JDBC, HATS retrieves passticket from DCAS

- **Developer may implement host credential mapper plug-in**

Application to Application Integration (Web & Portal)
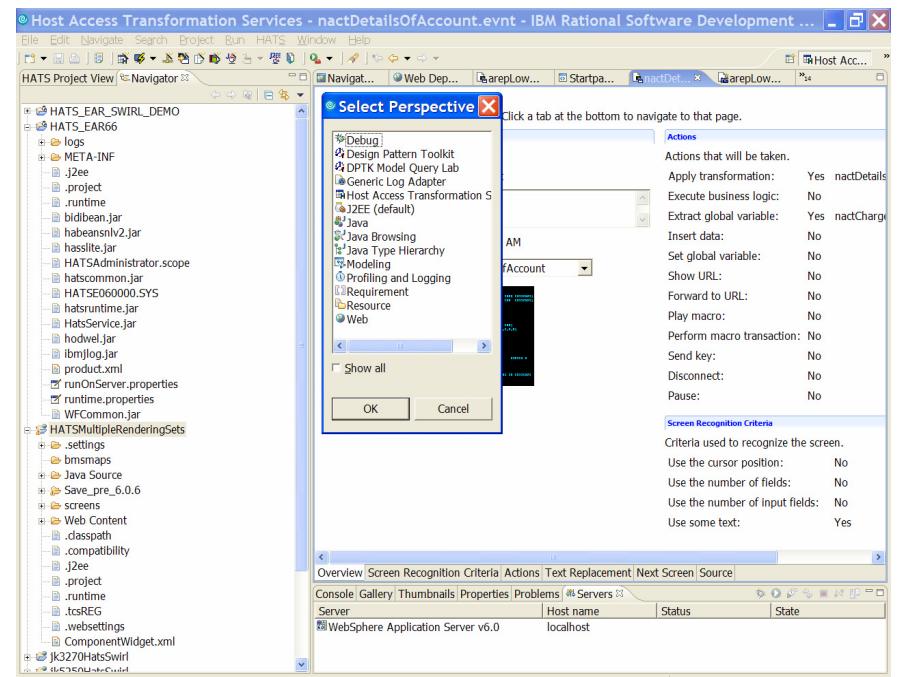
- Integrate terminal applications with J2EE applications
- Create reusable components:
  - Encapsulate screen navigations (macros) that define a business service in a standard JavaBean = HATS Integration Object (IO)
  - Supports session priming and pooling
  - "Chain" IOs for interactive flow through terminal application
- Using HATS Toolkit and Rational Software Delivery Platform, use IO(s) in:
  - Servlets
  - EJBs
  - Web services
- Access IO remotely via .NET or Java Application client

Application Server
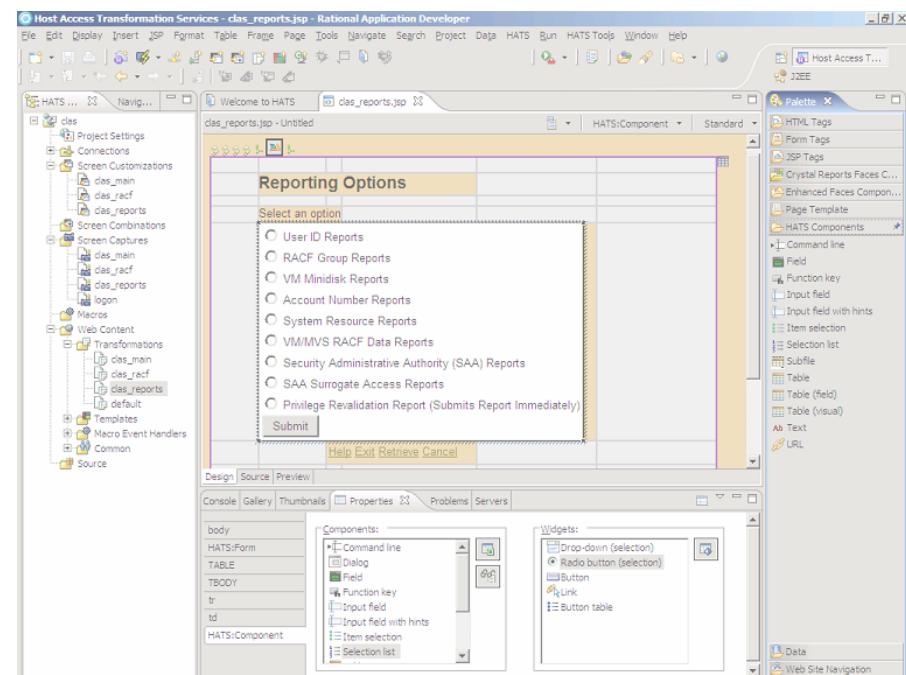
Rational Software Delivery Platform

- Eclipse-based, extensible development environment

- Comprehensive, integrated set of tools that support entire software development cycle

- Integrated Java Development Kit (JDK) and Java Runtime Environment (JRE)

- Integrated and optimized for IBM WebSphere® Application Server and IBM WebSphere Portal Server products, and includes test environments for these products

- Profiling tools for performance and scalability

- Team Collaboration to increase productivity

Host Access Transformation Services | Version 7.0

Transformation Creation and Editing

- **HATS Components available in the Palette view**

  – Drag and drop to your web page with Page Designer

- **Pre-fill transformations with default rendering**

- **Use Properties View for modification of components, widgets and text replacement**

- **Apply style sheets in Design view**

Macro Stepping

- **Step Into**
  - Allows stepping from action to action inside of a screen.
  - To use, press F5 or click
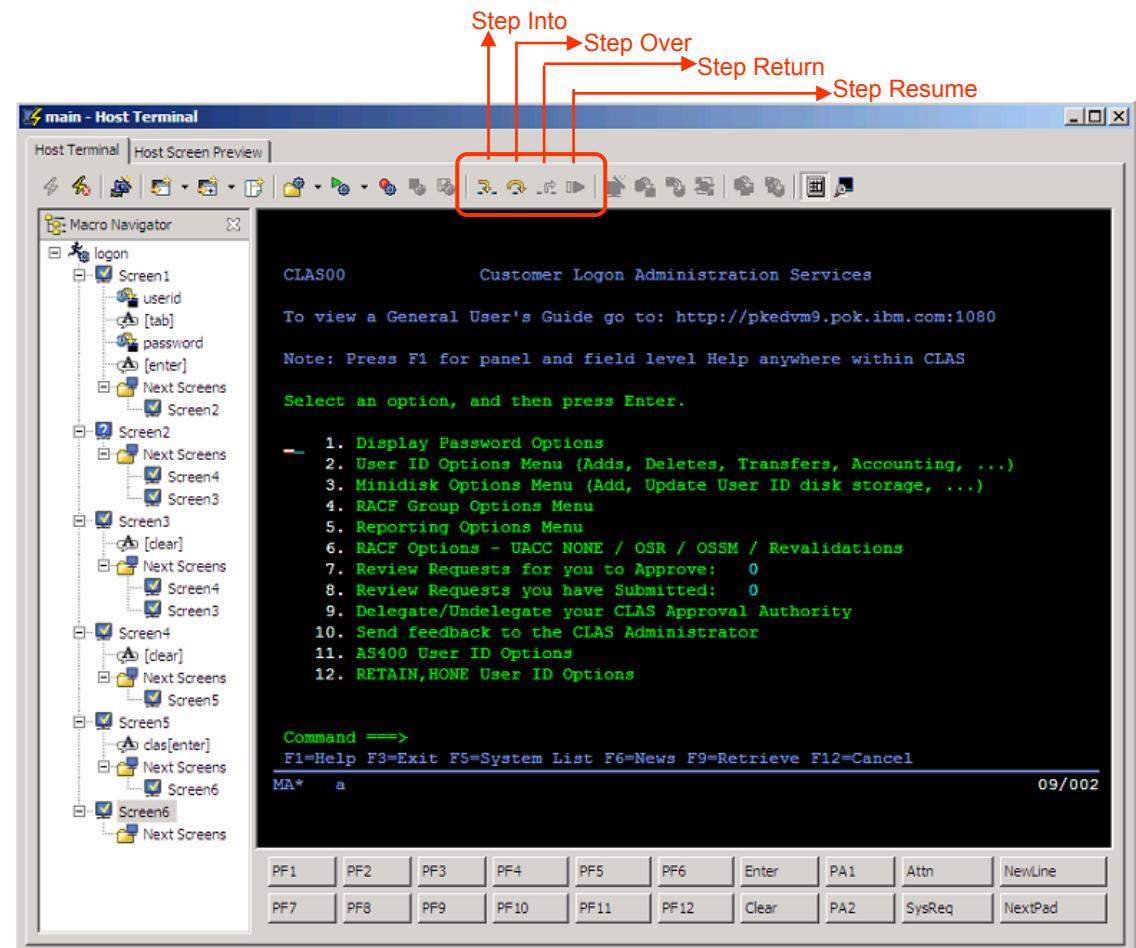
- **Step Over**
  - Allows stepping from screen to screen (all actions encountered along the way are executed).
  - To use, press F6 or click

- **Step Return**
  - Allows you to finish playing the actions under a screen and go to the next screen.
  - To use, press F7 or click

- **Step Resume**
  - Plays the rest of the macro from the current point
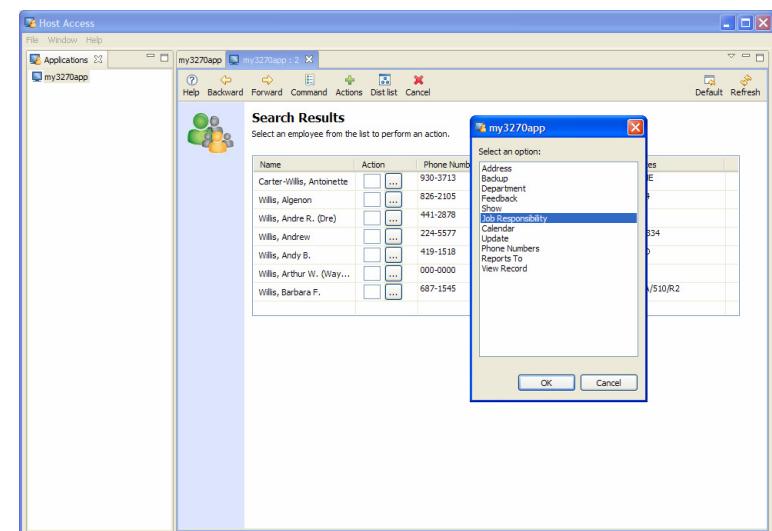
HATS V7 Themes

- Extend the transformation of 3270 and 5250 applications to the Rich Client Platform

- Developer and end user efficiencies

  - Screen Combination Wizard

  - Integration of Host Simulator into HATS toolkit

  - Export HATS table data to a spreadsheet
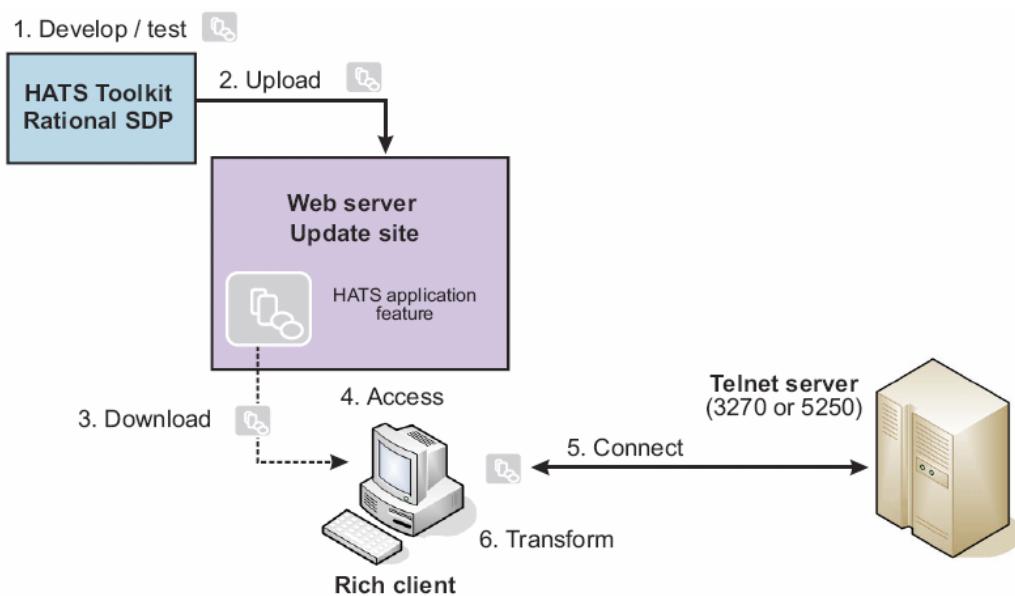
HATS Rich Client Platform Support

- Advantage: Increase end user productivity by integrating transformed 3270 and 5250 applications into a composite desktop

- Deployment options

  - Eclipse 3.2 Rich Client Platform

  - Lotus Expeditor V6.1

Host Access Transformation Services | Version 7.0   © 2007 IBM Corporation

Creating a HATS Rich Client Application

1. The developer uses the HATS Toolkit to develop and test a HATS rich client application.

2. When ready, the developer exports the HATS application as an Eclipse feature, creates an update site containing the application feature, and uploads it to a Web server for deployment.

3. The user, running a rich client platform, downloads and installs the HATS application feature from the update site.

4. The user starts and accesses the HATS application using the rich client platform environment.

5. The HATS runtime connects to the target host system through a Telnet server.

6. As the user interacts with the host through the HATS application, the HATS runtime transforms host screens to a GUI.
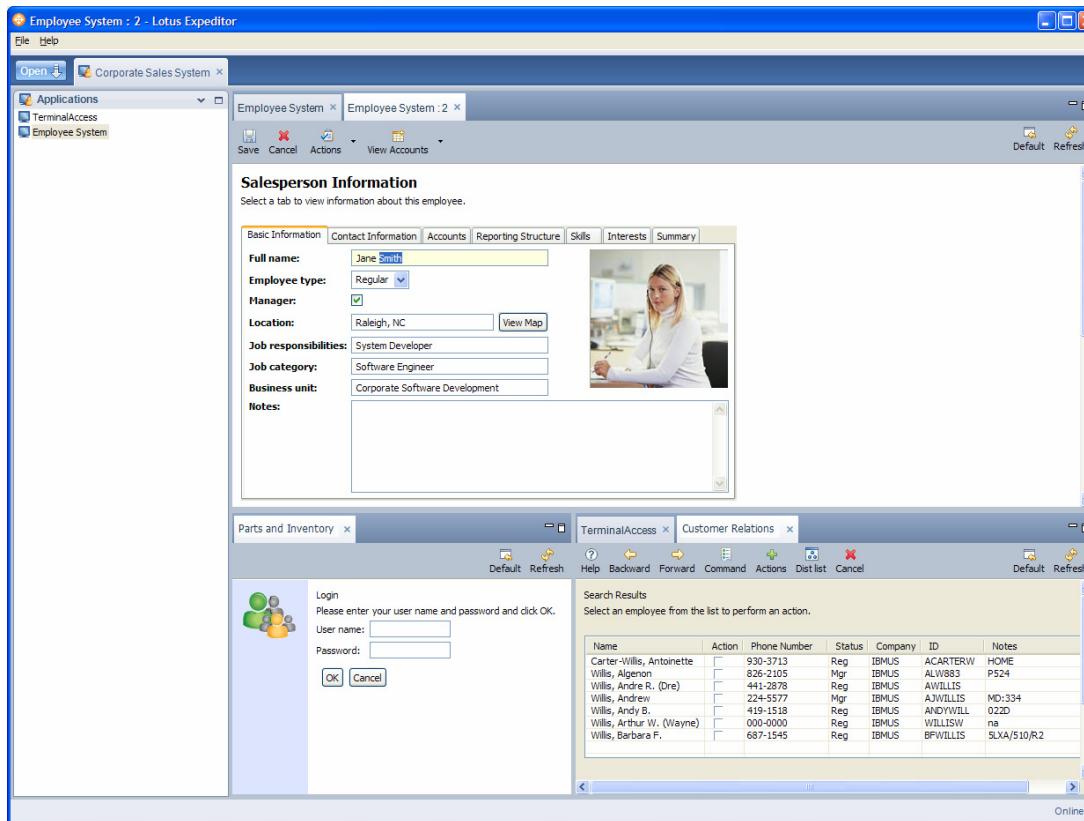
HATS Rich Client Advantages

- Integration at the desktop with other Eclipse applications

- Client side processing (no server bottlenecks)

- Better response time (good for slow speed links)

- Rich set of user interface widgets

- Extension of same "green screen" application to different end user communities
  - Deploy to Rich client platform for intranet users
  - Deploy to Web for internet users

- Built on the standard, open Eclipse foundation

- 3270e print directly to end user's printer

HATS Rich Client Design Points

- Use familiar HATS development concepts for building rich client applications

- Use your favorite HATS features for rich client applications:
  - Default transformation
  - Global Rules
  - Screen customizations and transformations
  - Macros and global variables
  - Business logic

- Transformations are designed visually using the Eclipse Java Visual Editor

- Further customization options
  - Custom HATS SWT Widgets
  - Ability to link standard SWT controls with host keys, host input fields, or macros
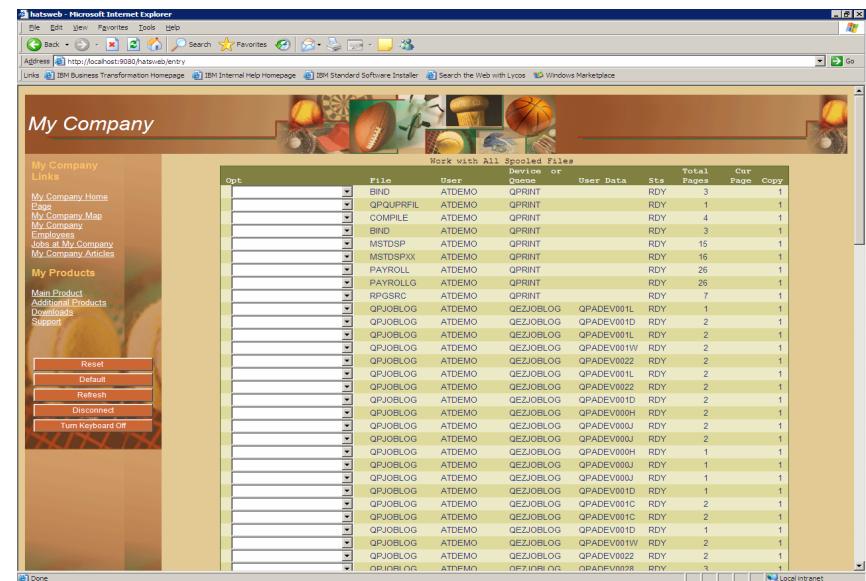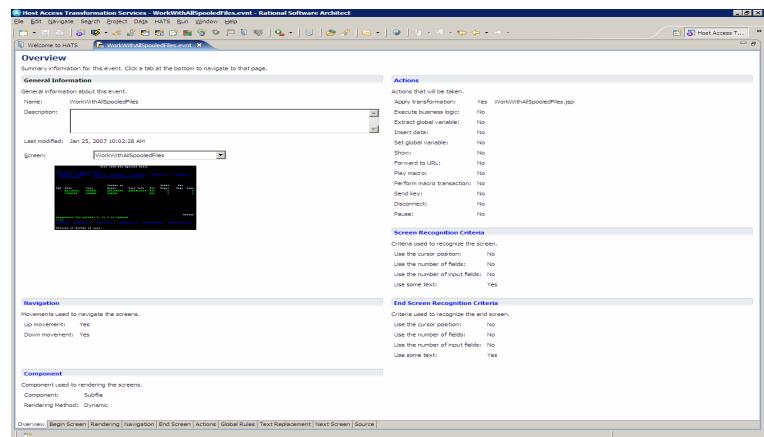
Multiple HATS applications in one view

Screen Combination Wizard

Edit screen combination in tabbed editor
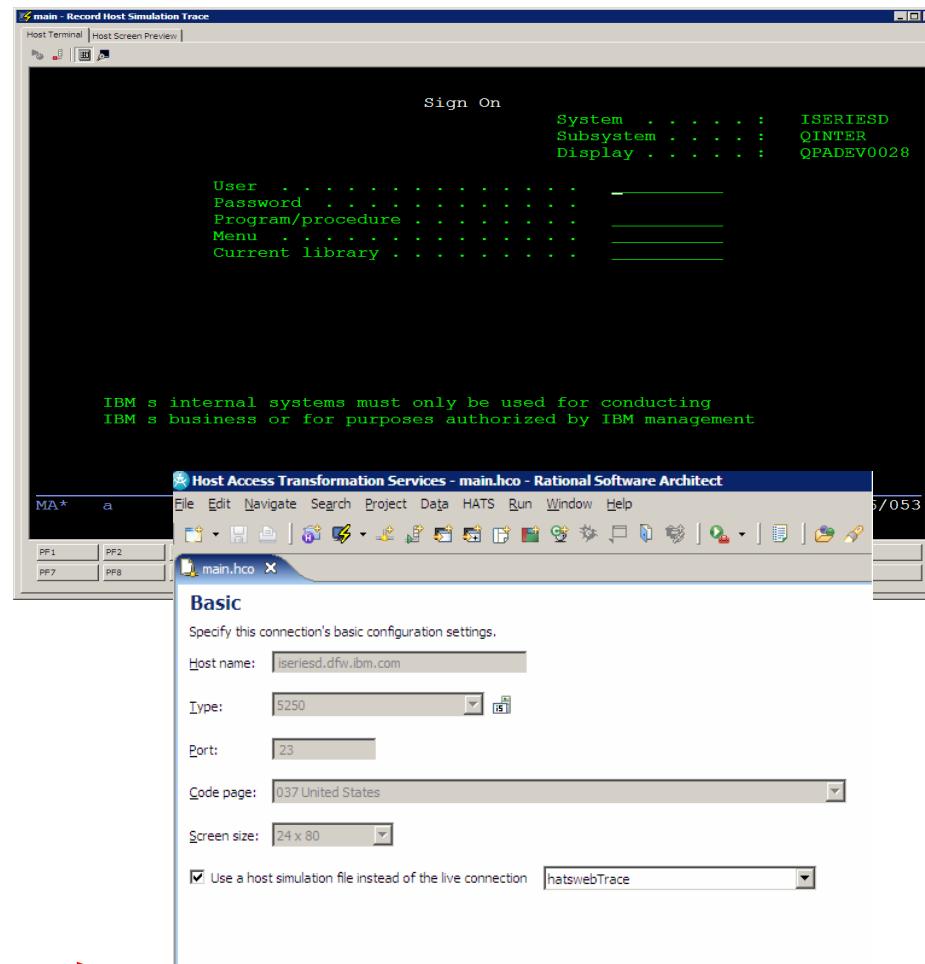
- Developer can combine screens of table, selection list, and subfile data onto one page with an easy to use screen combination wizard. No need for:

  – Macros

  – Global Variables

  – Macro handler pages

  – Integration Objects

- Increase end user efficiency by aggregating multiple screens of data onto one GUI

- AJAX option for dynamic loading of multiple screens

  – **Advantage:** End user does not have to wait for HATS to collect all the screens before first screen is displayed

Host Simulator in HATS Toolkit
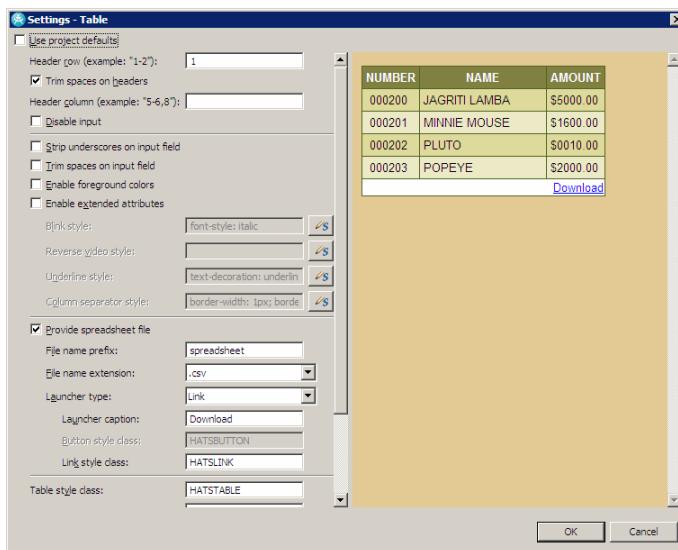
- **Host Simulator Definition:**

  - Records interactions with the host

  - Can be played back later for use with HATS terminal or HATS application without requiring host connectivity

- **Advantages:**

  - Offline and Off site development

  - Demos

  - Debug

  - Integrated- no separate install or UI

Edit connection to configure use of simulator trace

Export HATS table data to a spreadsheet
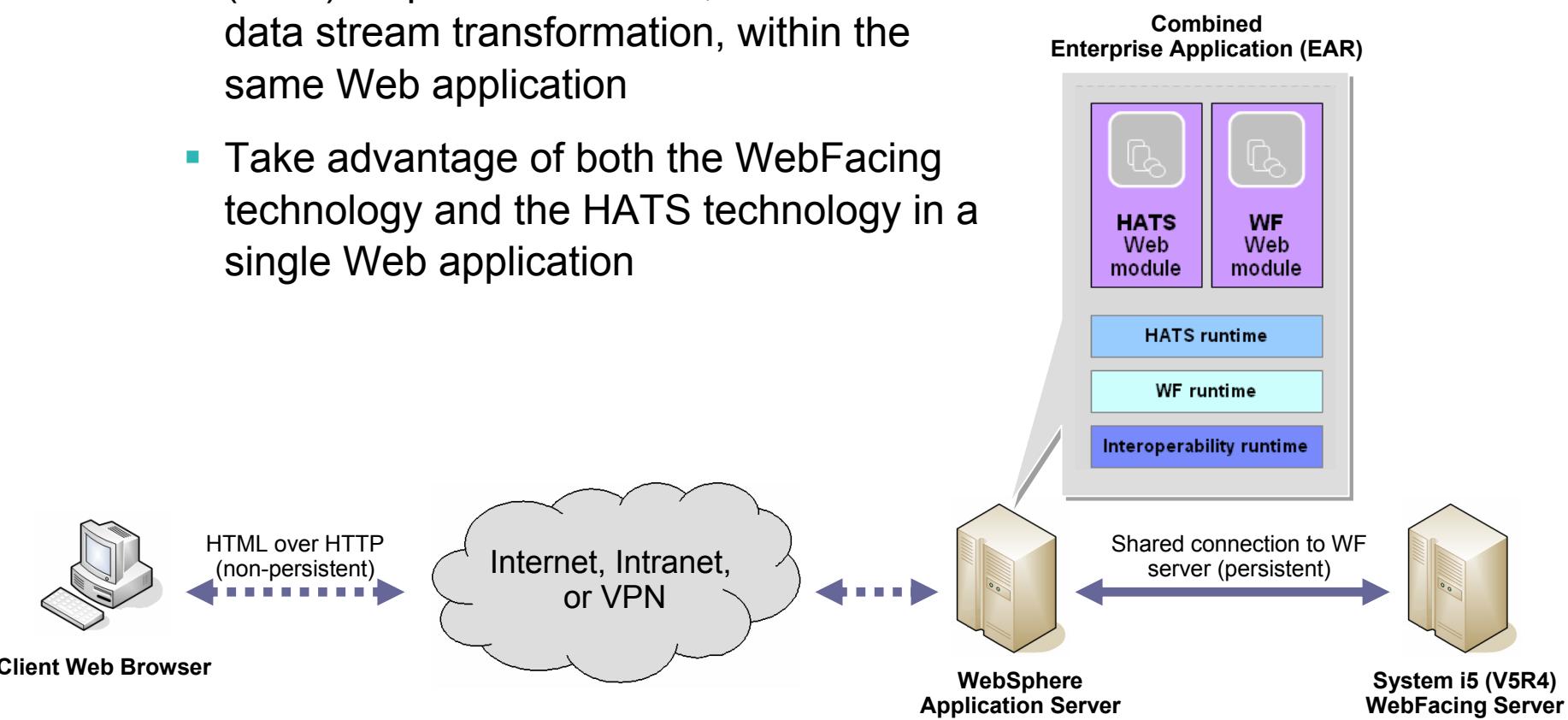
- **Advantage:** Table data from host screen automatically transferred to a spread sheet.

- New settings on the Table widget
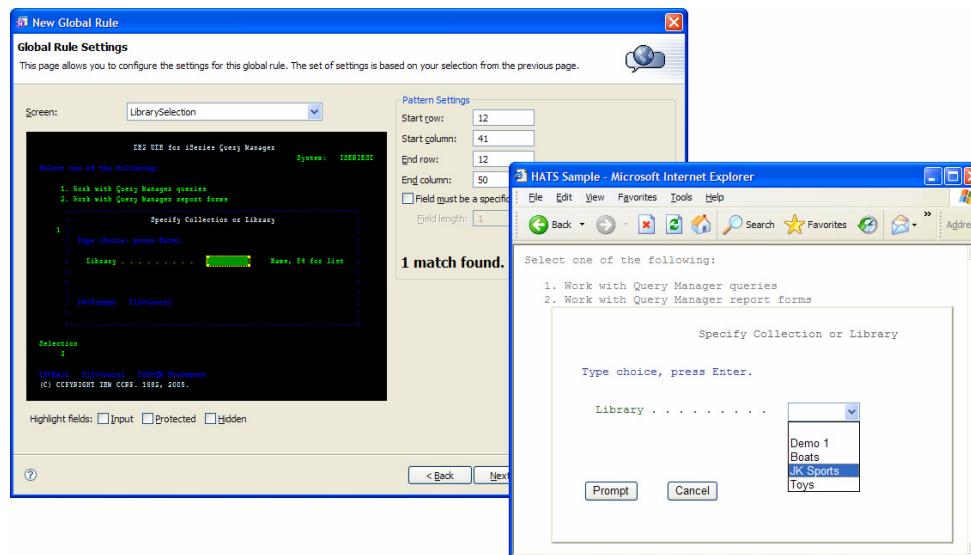
HATS and WebFacing runtime interoperability

- Perform data description specification (DDS) map transformation, as well as 5250 data stream transformation, within the same Web application

- Take advantage of both the WebFacing technology and the HATS technology in a single Web application

Combined Enterprise Application (EAR)

HATS Web module

WF Web module

HATS runtime

WF runtime

Interoperability runtime

HTML over HTTP (non-persistent)

Internet, Intranet, or VPN

Shared connection to WF server (persistent)

Client Web Browser

WebSphere Application Server

System i5 (V5R4) WebFacing Server
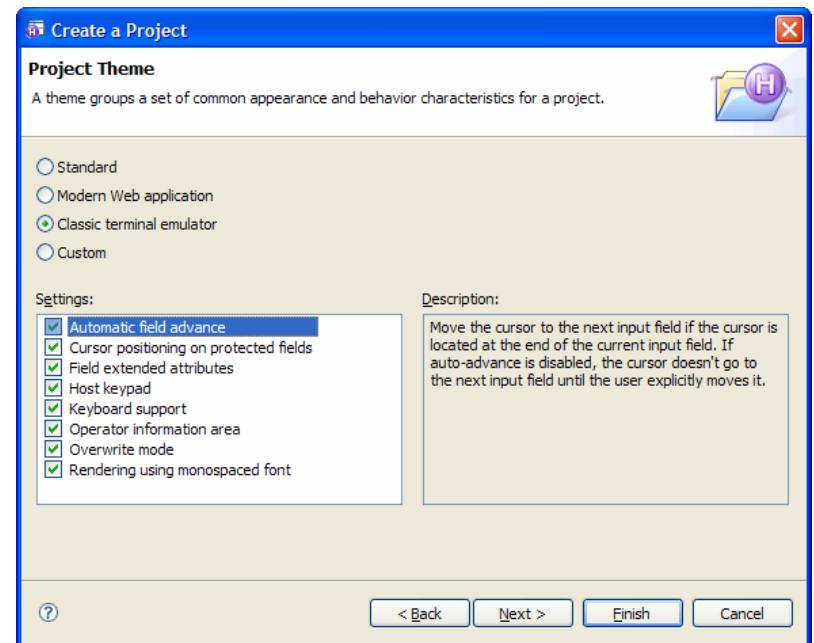
Other new enhancements

- **Global Rule Enhancements**

- **Project Themes**

Other new enhancements

- **New and improved host components and widgets**
  - New subfile rendering options are available in the rich client.
  - Provide user option of drop-down, popup, or checkbox.

- **Print support configurations**

Drop-down

Popup
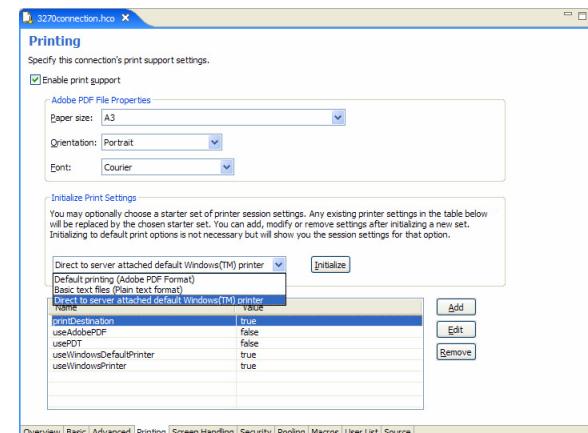
Checkbox

Other new enhancements

- Rendering patterns for transformations

- New Support For DBCS 3270 and 5250 Fields

- Default rendering enhancement

- Client settings configuration

Packaging

- **HATS Standard for Multiplatforms**
  - Applications can be deployed on any supported server platform
  - Available for use with 3270, 5250, and VT applications
  - Ships with a restricted WebSphere Application Server (WAS) Network Deployment license (does not include z/OS)
  - Support deployment to Web and Portal

- **HATS with Rich Client for Multiplatforms – add Rich Client support**

- **WebSphere Host Integration Solution (HIS)**
  - Ships with several Host Integration products
  - Includes HATS with Rich Client

- **WDHT (WebFacing Deployment Tool with HATS technology)**
  - Applications can be deployed on any supported server platform
  - Available for use with 5250 applications only
  - Ships with a restricted WebSphere Application Server (WAS) – Express license
  - Supports deployment to Web, Portal and Rich Client

Washington County, Virginia

Challenge

- Needed to provide access to citizens
- Needed more efficient response time to requests from citizens and staff

Solution

- A real-time e-government portal that delivers existing applications through a centralized electronic workplace
- Improved employee productivity
- An open, Web-based framework and content management platform

Modernization tools used include:

WebSphere Host Access Transformation Services (HATS)

WebSphere Portal Server

WebSphere Studio Site Developer

"We evaluated a lot of solutions, including Microsoft.Net, but the IBM WebSphere solution gave us an open, integrated environment to build e-government solutions across a variety of hardware and software platforms."

Nadine Culberson
Information Systems Manager,
Washington County

Mercantil do Brasil cuts application development cycle by half, reduces customer account creation by ten days, and cuts costs

Challenge

Help developers integrate the bank's .NET applications with its OS/390 environment.

Solution

Use IBM modernization tools to effectively bridge the gap between Mercantil do Brasil's .NET applications and its OS/390 operating environment.

Modernization tools used include:

WebSphere Host Access Transformation Services (HATS)

WebSphere Application Server for z/OS

WebSphere Studio Site Developer

Web Services

MERCANTIL DO BRASIL

Business benefits

- Process a new customer account in just 1 day instead of 11 days.
- Decrease development cycle time from 11 to 6 months, requiring fewer personnel
- ROI in 6 months
- 100 percent cost savings in 17 months
- Speeds creation of new customer services
- Ability to change other business models
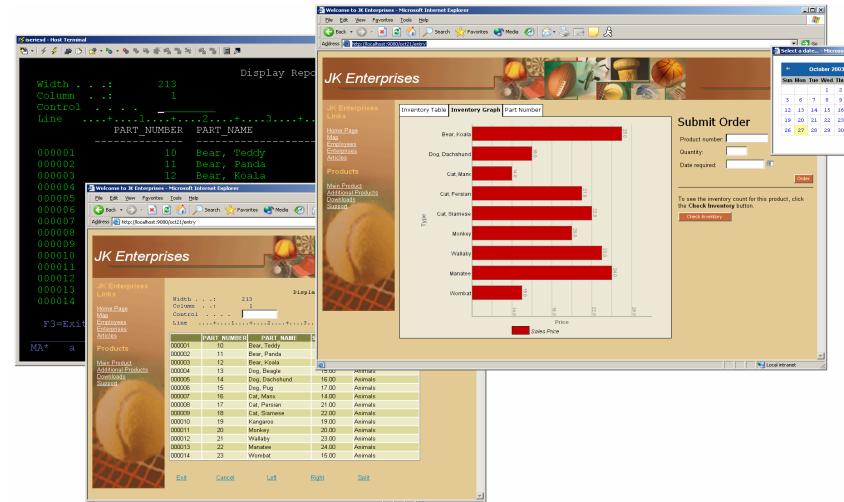
Customer quote

"Beyond the financial benefits, this new solution gave us speed and quality in the execution of our services."

-- Jaime Herrera, technical support manager, Mercantil do Brasil

Summary of HATS Features and Value Propositions

- Host screens are converted to GUIs on the fly, in real time

- Improved navigation of host application

- Zero footprint on the desktop with Web deployment

- Support deployment to Rich Client

- Combine screens and data from multiple applications

- Eliminates need to customize every screen

- Generate Web services from host transactions

- Exploits security & scalability of WebSphere Application Server and WebSphere Portal

- Extensible through IBM Rational Software Delivery Platform

- Supports iterative development

HATS Education
www.ibm.com/software/webservers/hats/education.html

- SW725 - Introduction to Building Web-to-Host Solutions using IBM WebSphere HATS - This Web-based training course is based on Host Access Transformation Services (HATS). The course is self-directed and self-paced, and divided into modules so you can select and customize the course to your educational requirements. This course is designed for anyone who wants to develop a fundamental understanding of HATS, as well as to learn how to use HATS Toolkit to develop basic HATS applications.

- SW913 - Advanced Web-to-Host Application Integration using IBM WebSphere HATS - 3 days - In this course, students will gain an in-depth understanding of how to transform existing 3270/5250 host applications using IBM WebSphere Host Access Transformation Services (HATS). Through a combination of lecture, demonstration and hands-on lab exercises, participants will learn how to use HATS Toolkit to develop applications that exploit the advanced features and capabilities of HATS to allow organizations to protect their investment in host applications by transforming them into Web-based applications. The advanced features that will be covered include macros, global variables, Integration Objects, Model 1 and 2 JSP pages to drive the Integration Objects and Web services support using HATS applications.

Resources

- **IBM WebSphere Host Integration Solution Product Page**
    - http://www-306.ibm.com/software/webservers/hostintegration/
- **HATS Product Page**
    - http://www-306.ibm.com/software/webservers/hats/
- **Demos**
    - http://websphere.dfw.ibm.com/whidemo/
- **Webinars**
    - http://www-306.ibm.com/software/webservers/hats/webinars/index.html
- **Library, Brochures, Presentations, Redbooks**
    - http://www-306.ibm.com/software/webservers/hats/library.html
- **Education**
    - http://www-306.ibm.com/software/webservers/hats/education.html
- **Services**
    - http://www-306.ibm.com/software/webservers/hats/services.html
- **Trial Code**
    - http://www-306.software.ibm.com/webapp/download/search.jsp?go=y&rs=hatst
- **Customer Comments**
    - http://www-306.ibm.com/software/webservers/hi_customers/
- **Business Partners**
    - http://www-306.ibm.com/software/webservers/hi_partners/
- **Customer Success Stories**
    - http://www-306.ibm.com/software/success/cssdb.nsf/advancedsearchVW?SearchView&Query=(host+access+transformation)+AND+[WebSiteProfile ListTX]=wssoftware&site=wssoftware&frompage=ts&Start=1&Count=30

Resources – Comprehensive HATS Demo CD

- ## To request a CD

  – Send an email to wsnfr@us.ibm.com. In your email, include the name of the CD (HATS Demonstration), how many CDs are needed, the type of CD (customer or business partner), the mailing address, and your phone number.

- ## Development Assistance

  – Participate in WebSphere HATS development lab advocacy program. Development resource assigned for consultation. Contact Pratik Nanavati, pratik@us.ibm.com.