



IBM Software Group

Enterprise Modernization

Transforming Software Development for System i

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Rational. software

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Agenda



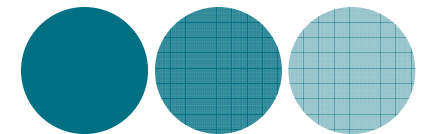
- ▶ Rational and System i
- ▶ Today's Realities
- ▶ Enterprise Modernization
- ▶ New Announcements
- ▶ EGL
- ▶ Getting Started
- ▶ Q&A

Rational and System i

- New Rational Organization
 - ▶ Enterprise Modernization
 - ▶ i5/OS Compilers and Tools transferred to Rational
 - Application development tools in same division for all platforms

- Focused on
 - ▶ System i and z customers
 - ▶ Business Application Developers
 - ▶ Bringing products to System i with native i5/OS support!

- Seamless platform independent tools and technologies for all supported systems.



Agenda

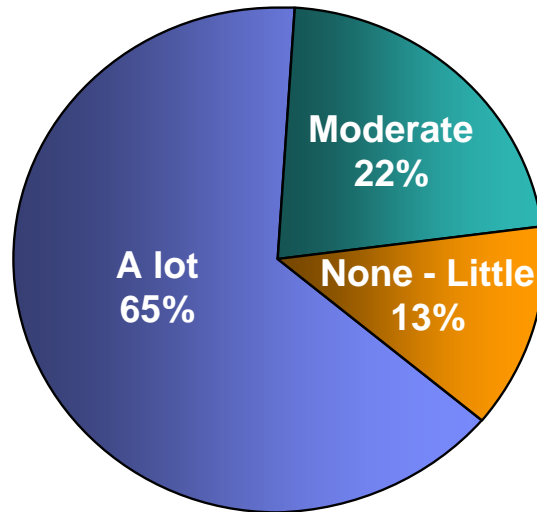


- ▶ Rational and System i
- ▶ **Today's Realities**
- ▶ Enterprise Modernization
- ▶ Getting Started
- ▶ Q&A



Enterprise Pressures and Opportunities

CEOs: extent of fundamental change needed over the next two years



commoditization pressures

increased competition

global marketplace opportunities

adjacent marketplace opportunities

global volatility and disruption

competing business models

83% think it's likely that changes in a competitor's business model will change their industry

Source: IBM Global CEO Study, 2006

"Most organizations would like to use technology as a competitive weapon ... but they're not doing so because they have a performance-oriented mind-set." — IBM Global CEO Study, 2006



IT as a Core Business Process

“IT investments made 10 to 20 years ago are ... constraining the speed with which these businesses can change and respond to industry threats.” – Gartner’s Top Predictions for Industry Leaders, 2007 and Beyond

- IT flexibility is a key enabler for today’s businesses
- To be successful, you must mature and modernize your IT tools and processes
- Companies face significant challenges getting from “here” to “there”.

“Aligning IT with the business relates directly with an IT group attaining real flexibility.” – Butler Group



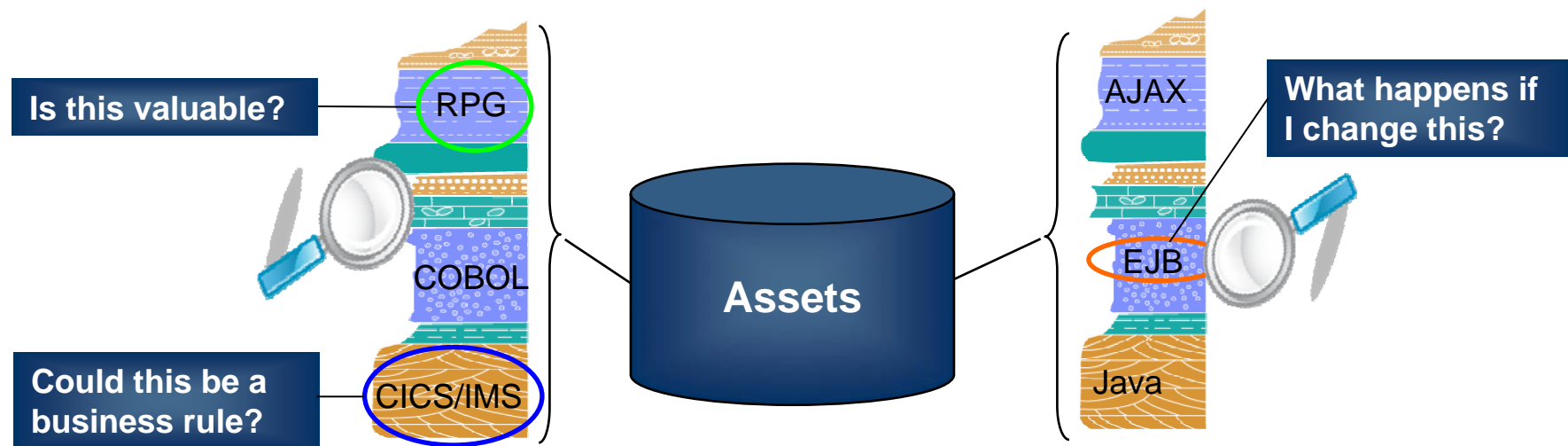
Customers are asking, can we.... ?

- **Leverage existing assets?**
 - ▶ Discover and gain control over our existing enterprise application portfolio?
 - ▶ Identify assets for reuse in a Service Oriented Architecture?
- **Leverage modern architectures?**
 - ▶ Create services easily from existing code, including CICS, IMS, i5/OS and 5250 terminal applications?
 - ▶ Define new services for all deployment platforms from initial design to implementation?
- **Leverage existing skills and attract new skills?**
 - ▶ Exploit new technologies and innovation without retraining existing staff that knows the business?
 - ▶ Utilize new employees on any project independent of target platform?
- **Leverage common development environment across siloed development teams?**
 - ▶ Lower costs due to elimination of duplicate tools and processes?
 - ▶ Realize improved end-to-end communication and traceability across the entire lifecycle?
- **Leverage my investments?**
 - ▶ Reduce maintenance costs, freeing resources to work on new projects?



Challenge #1: No Electronic Inventory of Assets

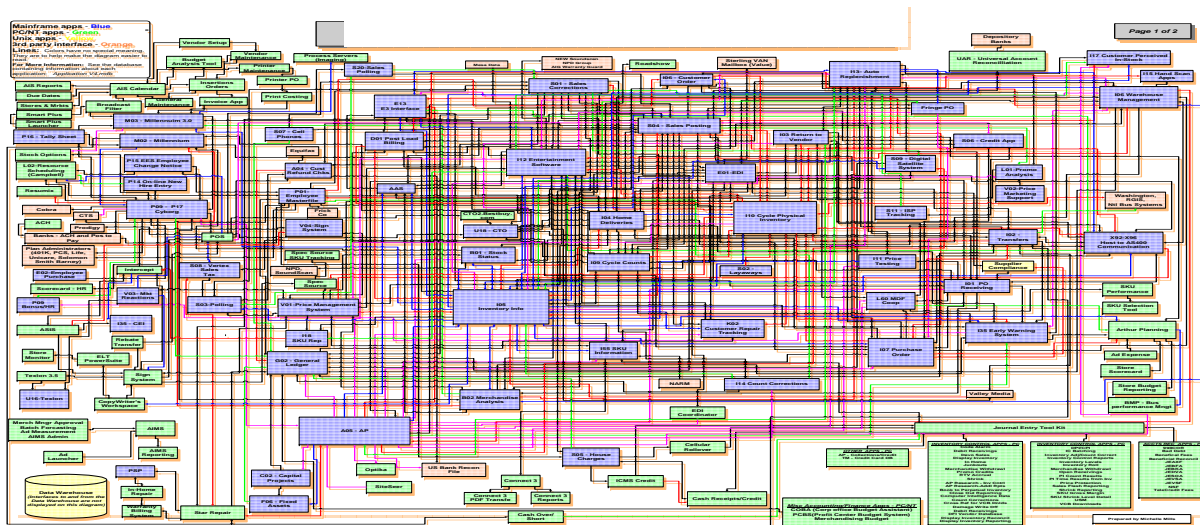
- Makes it difficult to gauge impact of code changes w/o electronic dependency info
- Inhibits reuse of assets in new contexts (for example, as a service)
- Limits the ability to separate business rules from code



“Legacy modernization is morphing into a strategic function. IT can't afford to toss away reliable application transactions indiscriminately.” - Phil Murphy, Forrester Research, April 2007

Challenge #2: Complex Application Architectures

- Application architectures have evolved to be convoluted, reducing flexibility and slowing creation of new solutions
- Complexity hampers the ability to reuse existing code for new projects
- Multiple implementation technologies and middleware limit code mobility

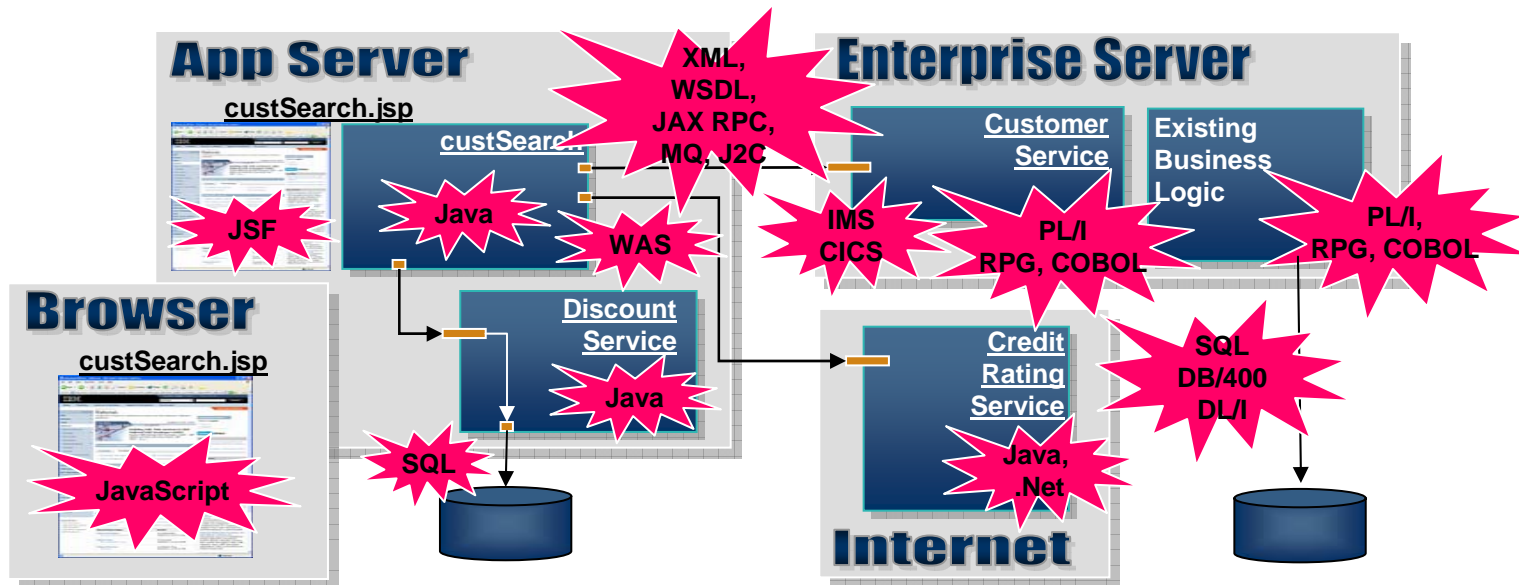


"Today's IT architectures, arcane as they may be, are the biggest roadblocks most companies face when making strategic moves."

The McKinsey Quarterly Special to CNET News.com, "Flexible IT, Better Strategy", January 24, 2004

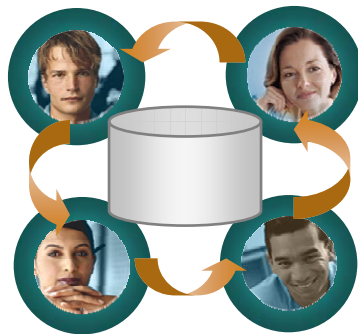
Challenge #3: Skills Lock-in

- Uncertainty about how to provide modern web UIs leveraging existing systems
- Reduced capacity to maintain existing applications due to dwindling IT skills
- Difficulty in attracting new development talent
- Constrained IT flexibility due to skills islands

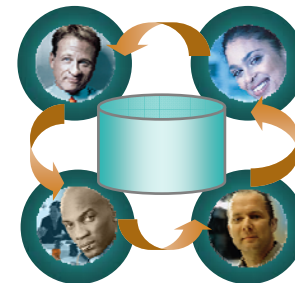


Challenge #4: Islands of Development

- Duplicate infrastructures limit flexibility, introduce errors, reduce productivity
- Multiple infrastructures increase costs, less capital to invest in new projects
- Lack of traceability inhibits end-to-end governance



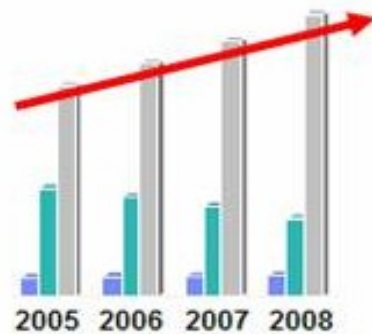
 **Distributed Development Environment**



 **System i Development Environment**

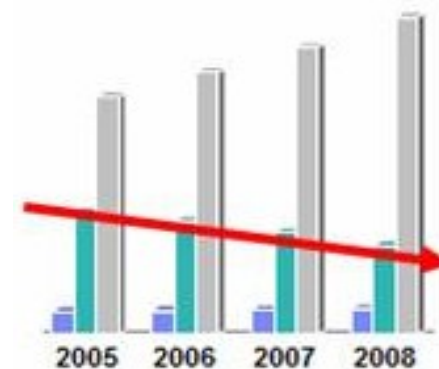
Challenge #5: No Flexibility for New Investments

- Resources are not available to exploit new opportunities
 - ▶ Must leverage existing staff or improve developer productivity
 - ▶ ~80% of IT budgets are used to maintain existing systems
- Systems stranded on expensive, unsupported, isolated development platforms
 - ▶ Cannot leverage new technologies and middleware advances
- No incremental plan for enhancements that deliver quick ROI
- Low productivity due to use of older development technologies



Rising Cost of Operations

VS



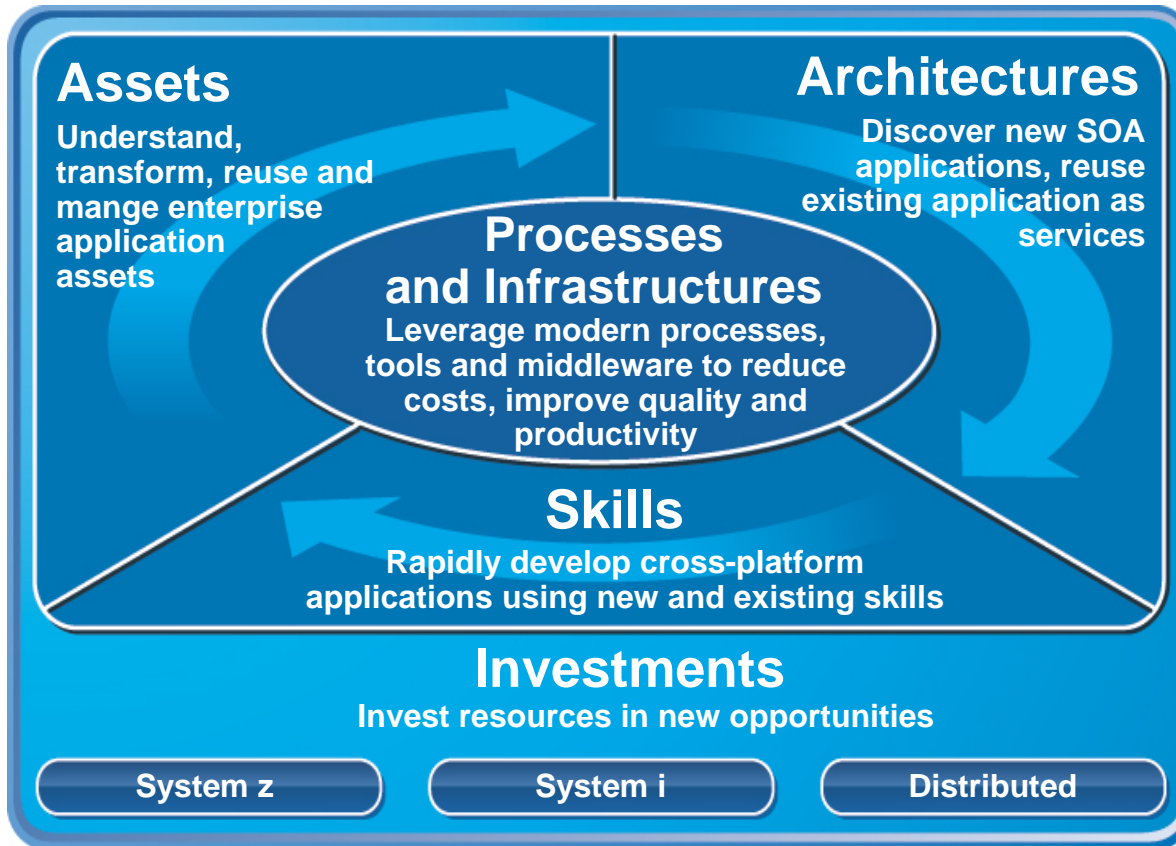
Declining Application Development Budget

Agenda



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- ▶ **Enterprise Modernization**
- ▶ New Announcements
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Enterprise Modernization – Solution Overview



- ✓ *Leverage value in existing assets*
- ✓ *Drive innovation with technology advancements*
- ✓ *Leverage existing and new skills on multi-platform projects*
- ✓ *Improve responsiveness of systems & people*
- ✓ *Reduce maintenance costs*

<http://www-306.ibm.com/software/info/developer/solutions/em/systems/i/index.jsp>



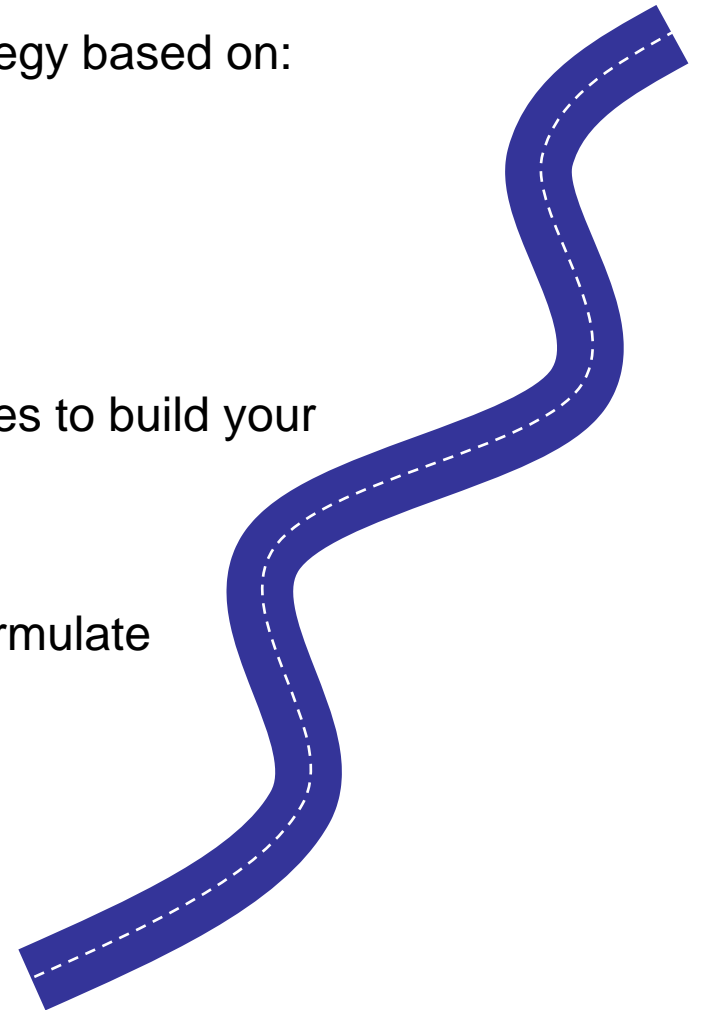
Enterprise Modernization - The Road Ahead

- Each customer needs a unique modernization strategy based on:
 - ▶ Your business requirements
 - ▶ Your budget
 - ▶ Your staffing constraints

- Choose one or more of the options on the next pages to build your modernization strategy.

- Rational and our business partners can help you formulate your own customized strategy for modernization

- Let's look at our solutions ...

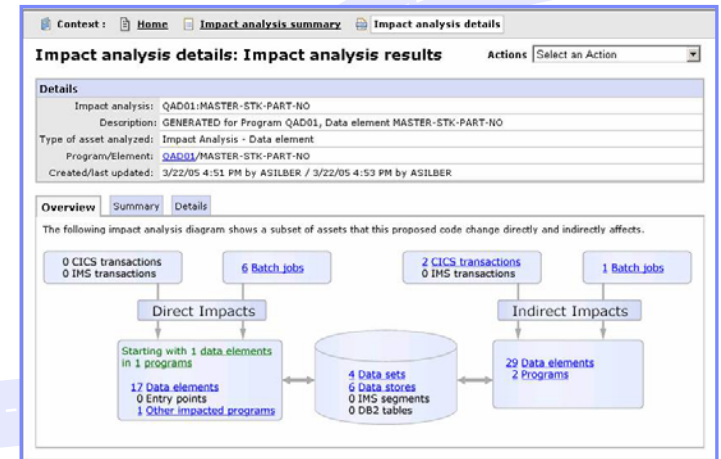




Modernize Your Asset Management

Discover, understand, and leverage existing applications & services

- Understand and analyze the impact of change across heterogeneous enterprise applications using **Databorough's X-Analysis**
- Manage assets across their lifecycle from design and creation to consumption and change with **Rational Asset Manager (RAM)** New!
- Deploy and manage runtime services using **WebSphere Service Registry & Repository (WSRR)**



Search for Assets

Search for: [Advanced search >>](#)

Your search and search results: 330 assets found

Filters: none

Name	Version	State	TeamSpace	Last modified	Relevance
testCreateWithRAMConnection.asset	1159491744676	Approved	RAM Group	Sep 28, 2006	
testCreateWithRAMConnection.asset	1159491744676	Approved	RAM Group	Sep 28, 2006	
TestDownload	1.0	Review	Delta Project Team	Oct 4, 2006	
TestDownload	1.0	Review	Delta Project Team	Oct 4, 2006	
Tester	1.0.1.2	Approved	Insurance LOB Testers	Oct 10, 2006	

Downloads

Rank: 40 out of 243

Total downloads: 1

Average for this asset type: 2.35

Unique downloads: 1

Artifact browses: 0

[Search for Assets >](#)

Tester

General details Content Rate and discuss Statistics

Asset information Name: Tester

My rating:

Average rating: (1 rating)



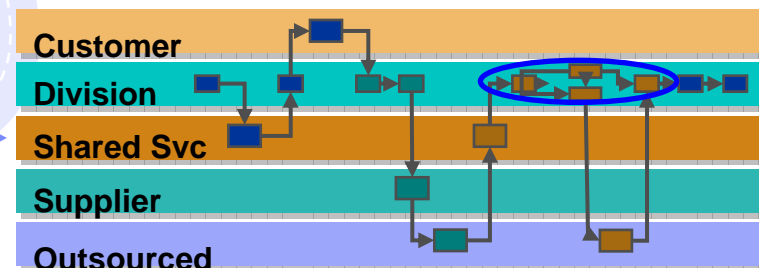
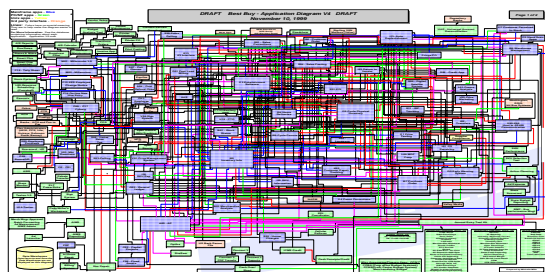
Modernize Your Architectures

Develop new SOA applications rapidly



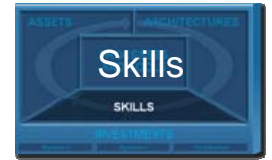
- Transform green screen applications to web UIs and/or web services using **Host Access Transformation Services (HATS) for 5250 Applications**
 - ▶ Quickest ROI – get to the web fast!
 - ▶ Generate web services directly from 5250 applications
- Create web services from RPG, COBOL CL, and Java with Web Services wizards using **Rational Developer for System i for SOA Construction (RDi for SOA)**
 - ▶ Create web services wrappers for RPG and COBOL programs
- Rapidly build, publish, and consume web services using **Enterprise Generation Language (EGL)**, included in RDi SOA
 - ▶ Leverage *Service* and *Interface* keywords to re-enforce SOA development principles
 - ▶ Supports i5/OS and J2EE

New!



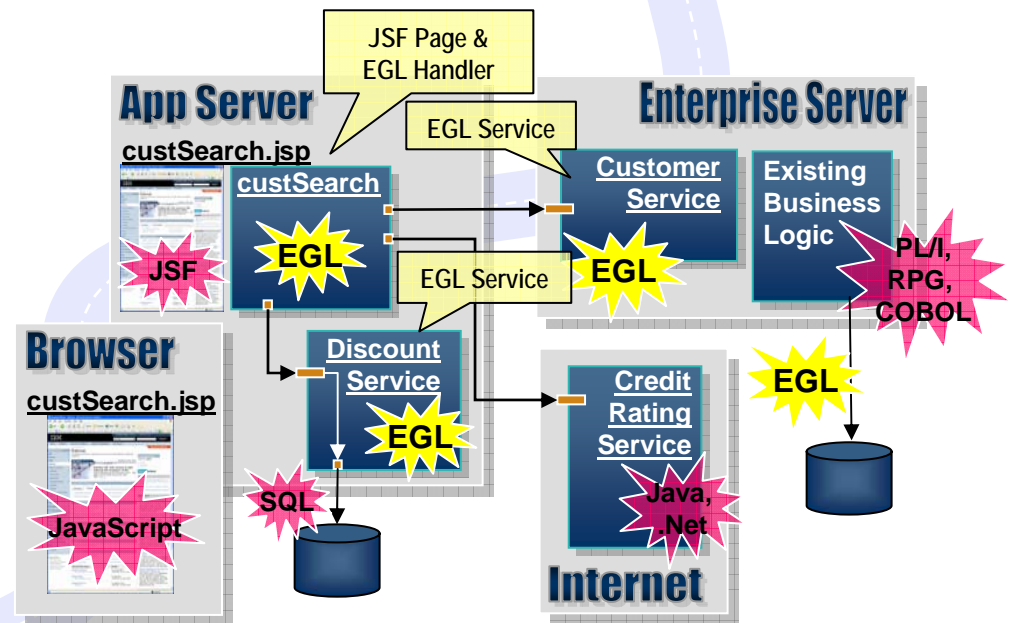
Modernize Your Skills

Powerful tools & abstractions for multi-platform development



- Exploit advances in middleware and technology while writing business applications using **Enterprise Generation Language (EGL)** support in **Rational Business Developer extension (RBDe)**

- Build all elements of leading applications .. “end-to-end” from Web 2.0 to services to batch processes
- Eliminate skill islands – EGL developers are able to develop applications for most platforms: i5/OS, CICS, IMS, z/OS Batch, WAS, Linux, Windows, AIX, HP-UX, Solaris



“Lack of skilled development resources” is the greatest inhibitor to implementing Web Services.

Evans Data Corp., 2007, “Web Services Development Survey, Vol. I”





Modernize Your Processes & Tools

Shared enterprise and distributed development environments

- ▶ Improve IT flexibility because employee skills can be leveraged across org
- ▶ Exploit single infrastructure for enterprise and distributed development
- ▶ Improve end-to-end communication and traceability across the entire lifecycle
- ▶ Lower costs due to elimination of duplicate tools and processes



Your governance solution should cover your entire topology as well as the entire lifecycle for all roles.



Consolidated Development Environment

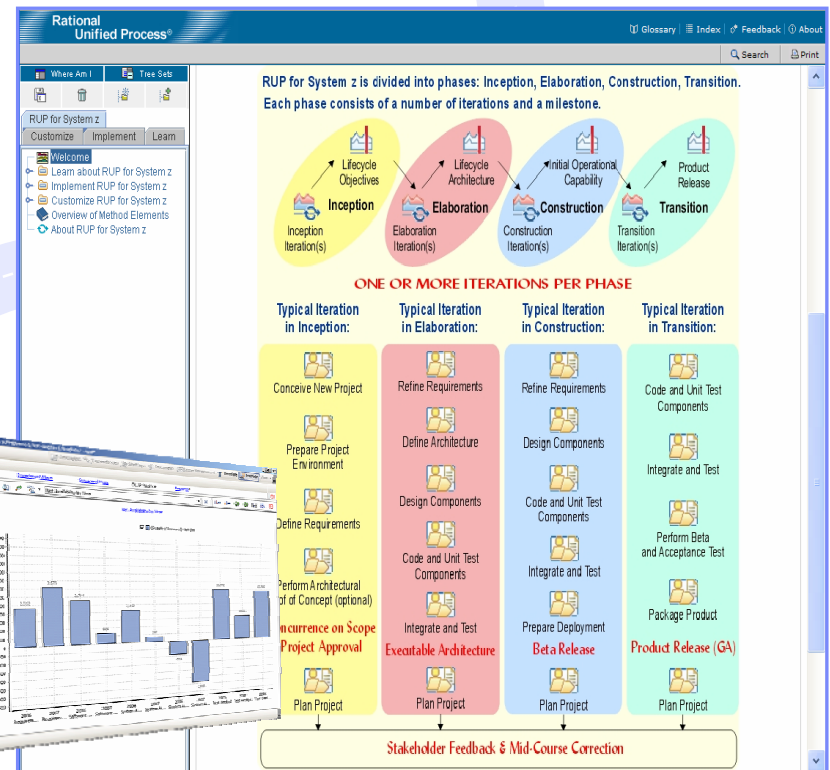
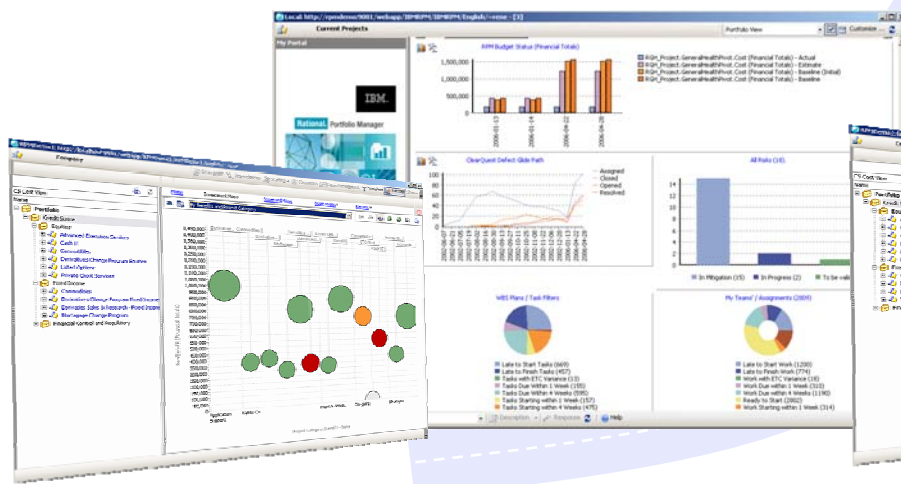




Modernize Your Processes

Centrally manage requirements, processes, activities, projects

- Manage requirements for both distributed and enterprise projects with **Rational RequisitePro**
- Take advantage of best practices in collaborative distributed development using **Rational Method Composer**



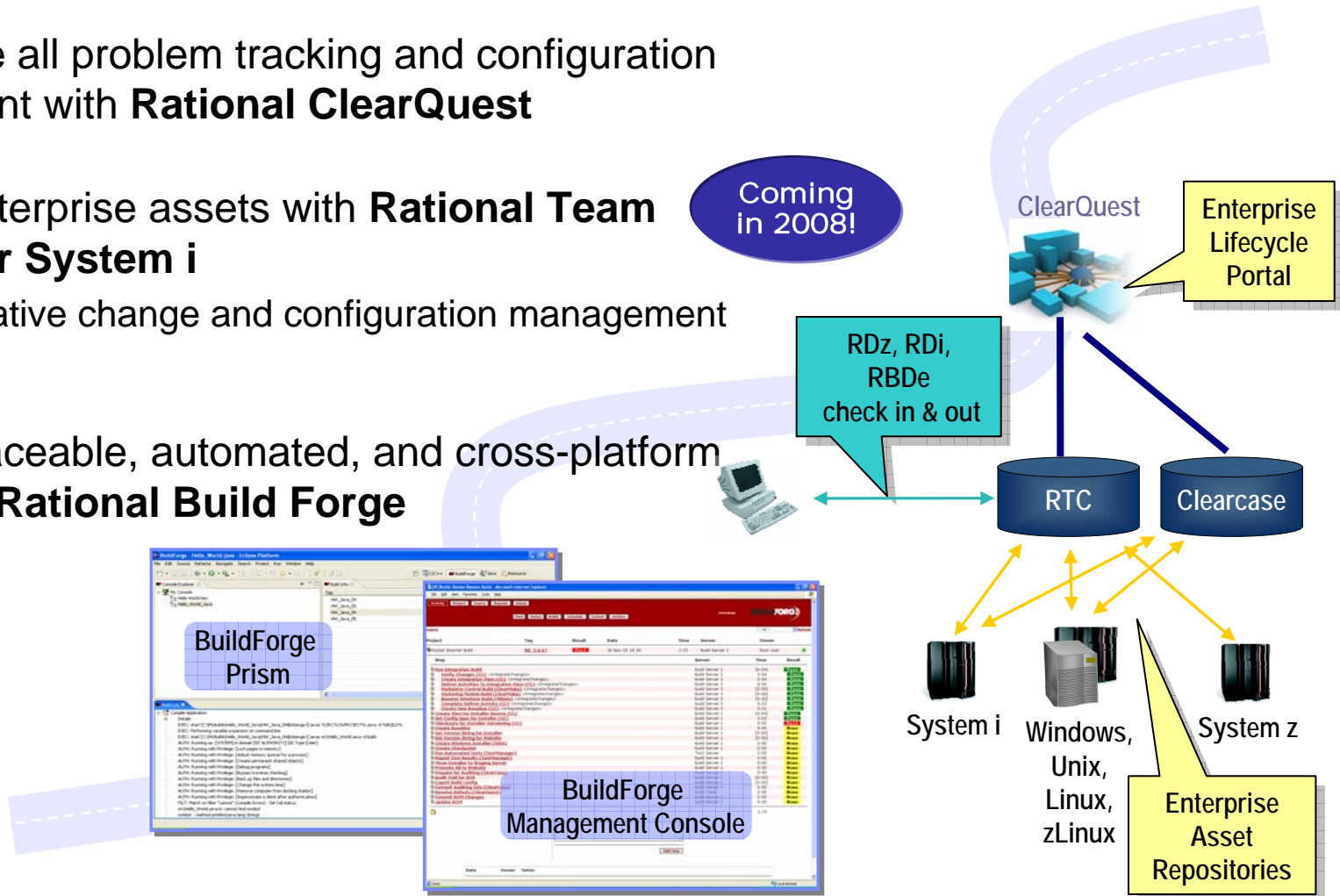


Modernize Your Team Infrastructure

Provide coordination, traceability, consistency across platforms

- Orchestrate all problem tracking and configuration management with **Rational ClearQuest**
- Manage enterprise assets with **Rational Team Concert for System i**
 - Collaborative change and configuration management solution
- Produce traceable, automated, and cross-platform builds with **Rational Build Forge**

Coming in 2008!



What is Rational Team Concert?

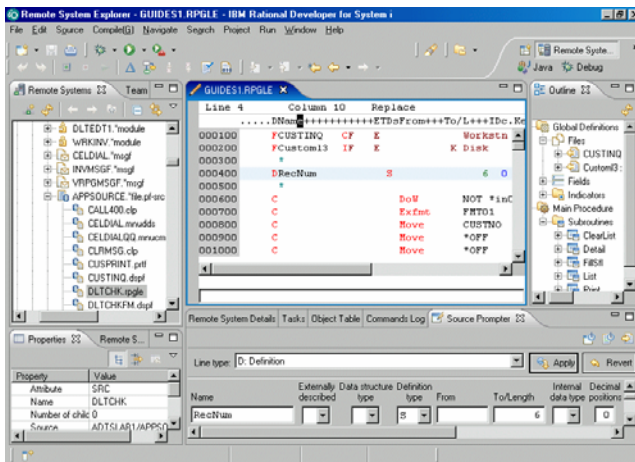
- **A New Family of Products based on Jazz Technology**
 - ▶ Optimized for Agile development teams in mid-sized & large businesses
 - ▶ Integrates the entire team around an integration server
 - ▶ Includes Enhanced Eclipse Development environment
- **Primary Features**
 - ▶ In-place collaboration between team members
 - ▶ Support and enforcement for development processes
 - ▶ Transparency of status and trends through automated data-gathering and reporting
- **Motivation**
 - ▶ Enable flexible, agile application lifecycle management
 - ▶ Low administrative footprint optimized for agile teams in SMB & large businesses
 - ▶ Step one in the rollout of “lifecycle service integration” middleware in the Rational Software Delivery Platform





Modernize Your IDEs

Achieve high productivity with modern development



- Use modern IDEs to develop and maintain code
 - ▶ Rational Developer for System i (RDi) New!
 - ▶ Rational Developer for System i for SOA Construction (RDi SOA) New!
 - ▶ Rational Business Developer Extension (RBDe)
 - ▶ Rational Application Developer (RAD)

- Benefits of a modern IDE
 - ▶ Syntax highlighting and code assist
 - ▶ Error detection and debugging services
 - ▶ Multi-platform and off-platform edit, compile, and debug
 - ▶ Recruit new developers w/ IDE built on open standards



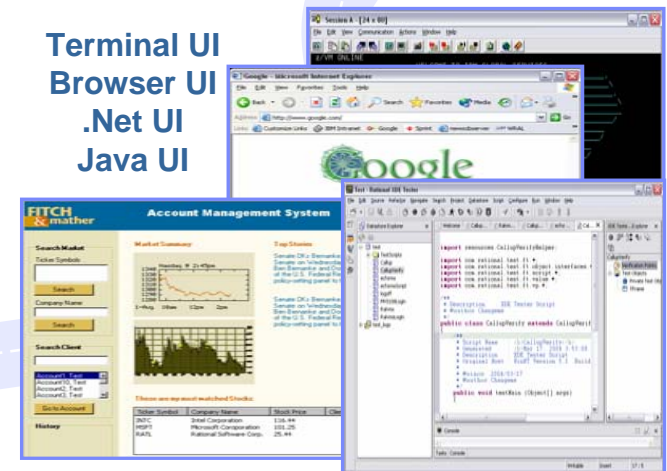
Modernize Your Development Investments

Save time and improve quality with modern Test Solutions



- Use **Rational ClearQuest Test Manager** to manage your testing process integrating requirements from **Rational RequisitePro**.
- Use **Rational Manual Tester** to provide comprehensive testing of anything including printed documents, internal processes, etc.
- Save time and improve quality by automating tests with **Rational Functional Tester (RFT)**, including extensions for 3270, 5250, and VT
- Ensure scalability of applications which expose existing assets in new ways (e.g. services) with **Rational Performance Tester (RPT)**
- Identify vulnerabilities, privacy issues, quality exposures, and standards non-compliance with **Rational AppScan**

Terminal UI
Browser UI
.Net UI
Java UI



Agenda



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V6R1 & 7.1 Announcement summary

Accelerating Enterprise Modernization for i5/OS



- Leveraging IBM's newest business language "EGL" to achieve new levels of business value and innovation
- Reducing time to market and lower risk by reusing existing i5/OS RPG/COBOL assets to deliver new solutions
- Increasing productivity and eliminating skill silos by simplifying development environment
- Improving efficiency and lowering costs by consolidating processes, tools, and infrastructures

Helping clients maximize the value of their IT investments through modernization

What are we announcing?

- **WDS** has been unbundled into three separate user based offerings
- **WDSC & WDSC/AE** have been stabilized and scheduled for end of life
- **WDHT** will be renamed to HATS for 5250 Applications
- **We introduced two new products:**
 - ▶ ***Rational Developer for System i*** (RPG, COBOL, CL development)
 - ▶ ***Rational Developer for System i SOA Construction*** (includes RBD and RDi)

<http://www.ibm.com/software/rational/announce/systems/i/>

<http://www.ibm.com/software/info/developer/solutions/em/systems/i/index.jsp>



WDS – Unbundled (5761-WDS)

- **ILE Compilers**

- ▶ RPG, COBOL, C, C++
- ▶ *Enhanced and Strategic*

- **Heritage Compilers**

- ▶ S36, S38, OPM compatibility compiler
- ▶ *Stabilized*

- **ADTS**

- ▶ SEU, PDM, SDA, RLU, DFU
- ▶ *Stabilized*



New Packaging for WDS

WDS V5R4

- ILE RPG
- S/36 Compatible RPGII
- S/38 Compatible RPGII
- RPG/400
- ILE RPG *PRV Compiler
- ILE COBOL
- S/36 Compatible COBOL
- S/38 Compatible COBOL
- OPM COBOL
- ILE COBOL *PRV Compiler
- ILE C
- ILE C++
- IXLC for C/C++
- ADTS

- WDSC

WDS V6R1

Feature: ILE Compilers

- ILE RPG
- ILE RPG *PRV Compiler
- ILE COBOL
- ILE COBOL *PRV Compiler
- ILE C
- ILE C++
- IXLC for C/C++

Feature: Heritage Compilers

- S/36 Compatible RPG II
- S/38 Compatible RPG II
- RPG/400 (RPG III)_
- S/36 Compatible COBOL
- S/38 Compatible COBOL
- OPM COBOL

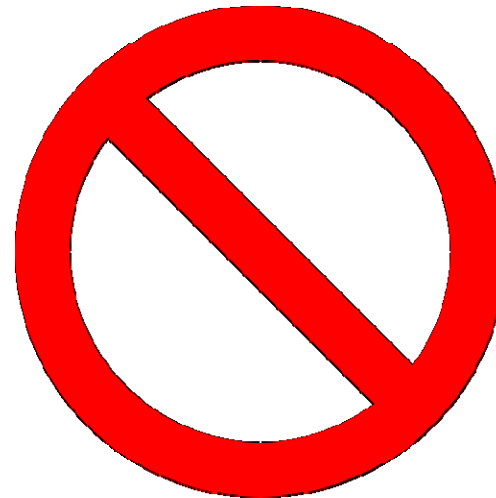
Feature: ADTS

- ADTS

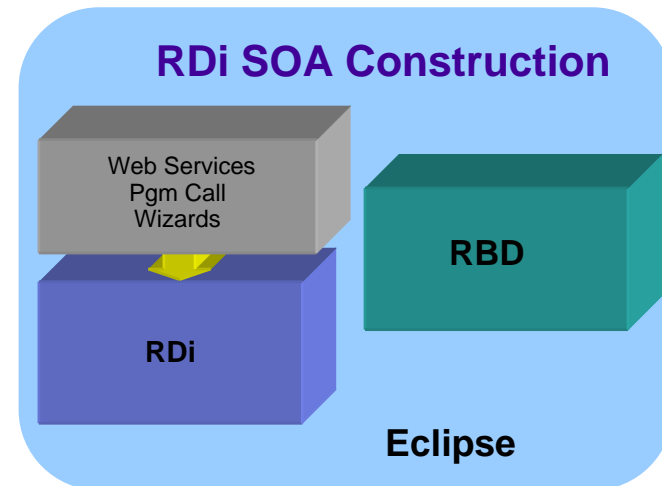
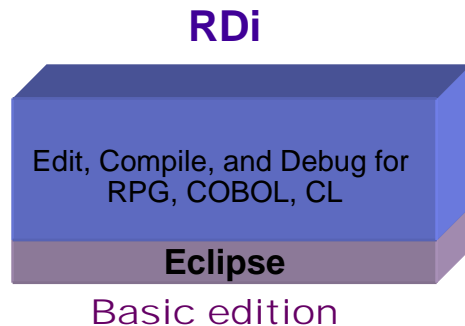


Product Changes – WDSC & WDSC Advanced Edition

- WDSC 7.0 and WDSC-AE 7.0
 - ▶ Stabilized at V5R4 of i5/OS
 - ▶ Scheduled for End of Marketing 1st Q 2008
 - ▶ Scheduled for End of Service April 2010



New Rational products: RDi & RDi SOA



■ New Rational products

- ▶ **RDi** – lightweight Eclipse based development tool for SOA edition
RPG, COBOL, and CL programs
 - Includes LPEX, RSE, and End to End Debugger
 - New features include: Application Diagram and the Screen Designer
- ▶ **RDi SOA** – EGL, SOA, Web tools
 - RDi + Rational Business Developer (RBD) with EGL
 - Tools for Web Design with RBD(EGL)
 - Web Services from RPG/COBOL
 - For developers who need end-to-end web and SOA solutions
- ▶ **HATS for 5250 Applications** – WebFacing and HATS
- ▶ **RAD** - Advanced Java Development (J2EE)

- Eclipse based – integrates with complete Rational suite of tools



5761-WDS: New licenses

- User priced
- Additional users over minimum charged at unit price per user
- Each Feature sold separately

WDS -- ILE Compilers

Tier	Minimum Users	Unit Price	Total Customer Price
P05	1	\$1,795	\$1,795
P10	3	\$1,795	\$5,385
P20	4	\$1,795	\$7,180
P30	10	\$1,795	\$17,950
P40	15	\$1,795	\$26,925
P50	20	\$1,795	\$35,900
P60	25	\$1,795	\$44,875

WDS -- Heritage Compilers

Tier	Minimum Users	Unit Price	Total Customer Price
P05	1	\$1,295	\$1,295
P10	3	\$1,295	\$3,885
P20	4	\$1,295	\$5,180
P30	10	\$1,295	\$12,950
P40	15	\$1,295	\$19,425
P50	20	\$1,295	\$25,900
P60	25	\$1,295	\$32,375

WDS - ADTS

Tier	Minimum Users	Unit Price	Total Customer Price
P05	1	\$795	\$795
P10	3	\$795	\$2,385
P20	4	\$795	\$3,180
P30	10	\$795	\$7,950
P40	15	\$795	\$11,925
P50	20	\$795	\$15,900
P60	25	\$795	\$19,875



Functional equivalence & Entitlement Considerations

WDS V5R4

- ILE RPG
- S/36 Compatible RPGII
- S/38 Compatible RPGII
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- ILE RPG *PRV Compiler
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- ADTS

WDS V6R1 (5761WDS)

Feature: ILE Compilers

- ILE RPG
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- OPM COBOL

Feature: ADTS

- ADTS

Entitled to max 'x' users

Based on tier

•WDS_c

WDSC 7.0

• New products
(Chargeable)

{ RD_i 7.1 "5733RD_i - 5724T82 (PPA)"
RD_i SOA "5733SOA-5724T83(PPA)"



Additional Entitlement Considerations

WDSC Advanced Edition

Entitled to 1 license
of each →

- RDi SOA
- HATS For 5250 toolkit
- RAD

WDSC purchased through PPA

Entitled to 1 license
→

- RDi SOA



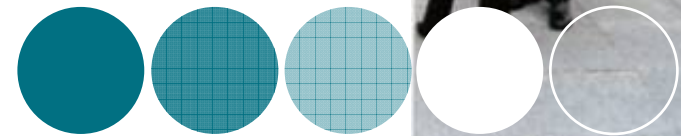
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EGL

- Today's application construction challenges
- Rational Business Developer and EGL
 - ▶ Capabilities and value proposition
- EGL Momentum



Development challenges

SAP HR system
 Custom .Net applications
 Back-office legacy systems
 Home-grown line of business apps.
 Oracle Siebel CRM



.Net
 Linux
 COBOL/zOS
 Windows
 AIX
 Java
 5iOs

Existing Applications

- Costly to maintain
- Monolithic
- Hard to reuse in new ways

Skills

- Skills silos
- Skills mismatch
- Erosion of legacy platforms skills

Platforms / Middleware

- Proliferation
- Coexistence
- Complexity



High costs

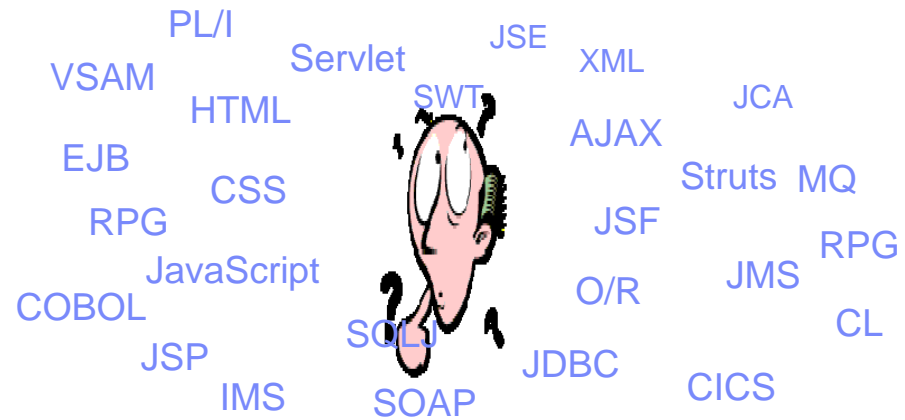
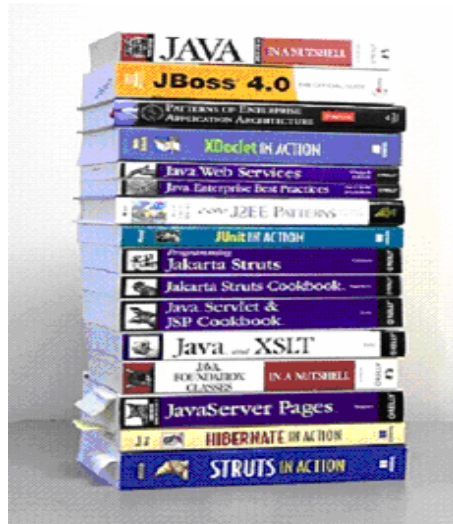
Compromise

Slow response



A Closer Look at Construction Challenges

Building applications today is not easy



- Learn and master a myriad of middleware programming interfaces.
- Understand new programming paradigms, frameworks, libraries.
- Cross platform solutions require totally different programming skills.
- Constantly emerging new technologies, frameworks, standards, etc.

Learning and Adoption



- Java – great language and technology too difficult for customers to learn and adopt



- Comfortable language, great capabilities, but aging staff, no new developers

RPG

- C# is an OO language same issues as Java plus many API's



“Re-training COBOL developers to Java/J2EE costs over \$50K each, and only 12% may actually succeed” – Gartner Group

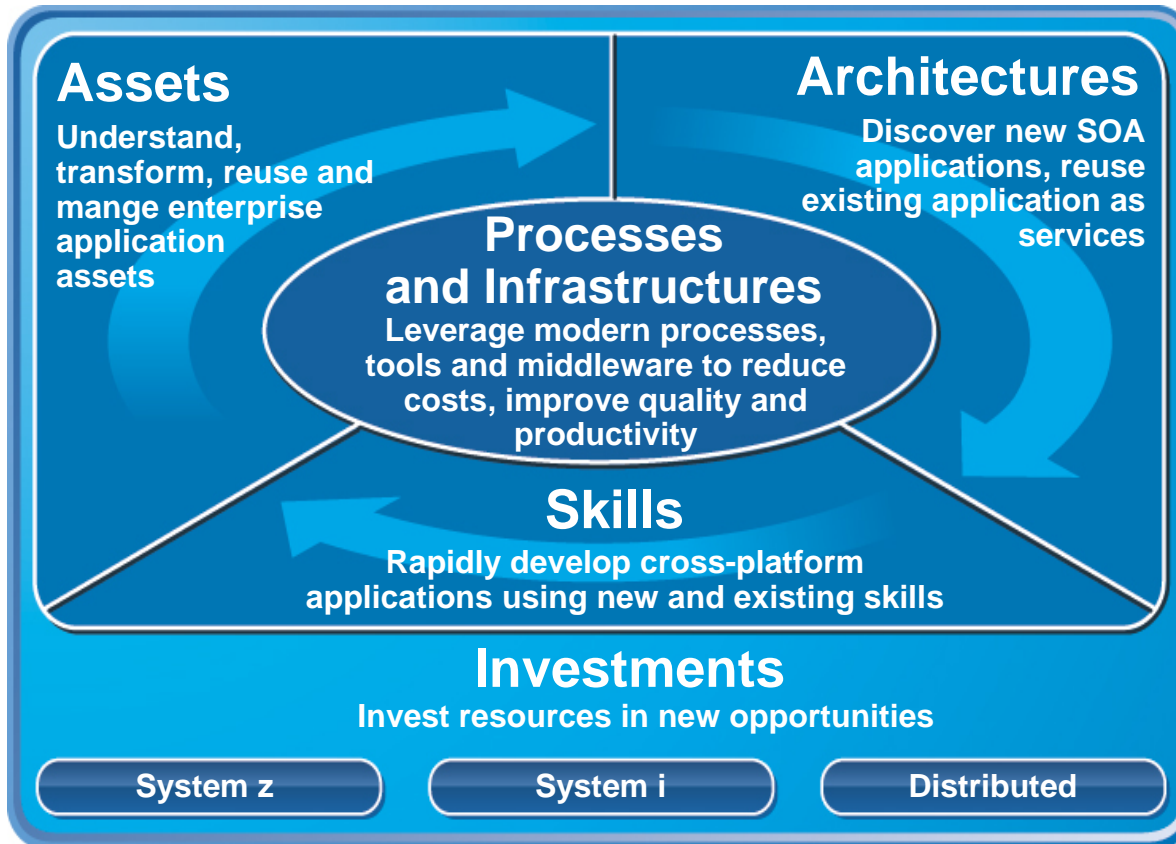
“The task force had an initial meeting and identified challenges to teaching Java based on the literature and our experiences.” – ACM Education Board Java Task Force

<http://www.sigcse.org/topics/javataskforce/>

An insurance company spent approximately \$250,000 to train 12 RPG developers. One out of 12 succeeded. This person had a MS in Computer Science and 8 years of C programming experience. – Bob Cancilla



Enterprise Modernization – Solution Overview



- ✓ *Leverage value in existing assets*
- ✓ *Drive innovation with technology advancements*
- ✓ *Leverage existing and new skills on multi-platform projects*
- ✓ *Improve responsiveness of systems & people*
- ✓ *Reduce maintenance costs*

<http://www-306.ibm.com/software/info/developer/solutions/em/systems/i/index.jsp>



Introducing IBM Rational Business Developer

New capabilities to accelerate enterprise application modernization and empower business oriented developers to reduce development costs via reuse, control maintenance burdens and rapidly deliver new applications

- *Simplify and accelerate cross platform development, including System i and System z*
- *Break skills silos and create a pool of “business” developers to respond faster to business needs with a unified more abstract development approach*
- *Easily integrate enterprise applications into service oriented architecture.*

▪ **New offerings**

▶ IBM Rational Business Developer

- **Enterprise Generation Language**



**New and
Enhanced!**

Accelerate Cross-Platform Web and SOA Development

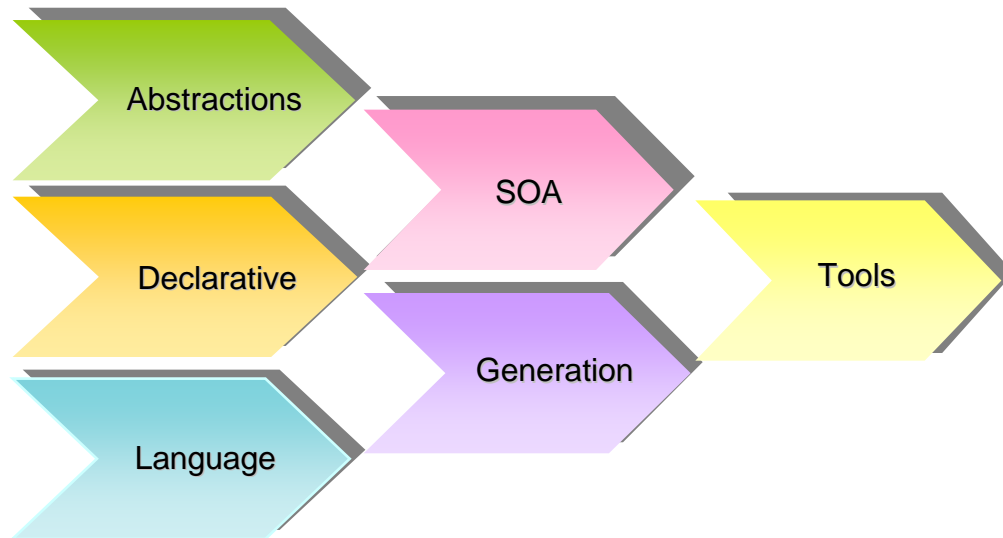
EGL Principles

- Decouples application specification from runtimes.
- Is built with “extensibility” in mind
- Immediately useable by developers of any background.
- Hides technical complexity.
- Supports emerging standards and technologies.
- Allows optimal (native) deployment to any platform (new and traditional)
- Ensures easy inter-operability with legacy.
- Delivers productivity without compromising flexibility:
 - ▶ Language simplicity.
 - ▶ Language robustness.
- Enables agile, iterative development.



Rational Business Developer

A simple, robust, unified approach to end-to-end construction of application and services that shields developers from intricacies of runtimes and middleware



Rapidly Deliver...

Modern Innovative Solutions...

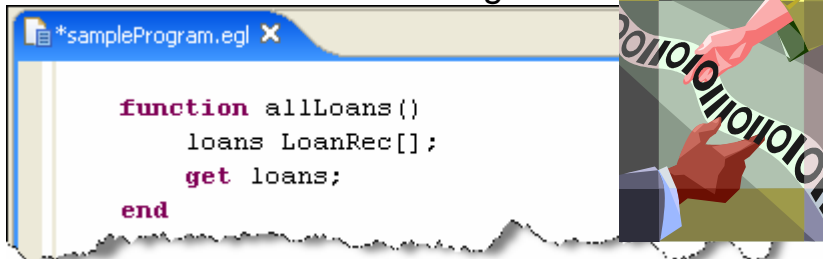
With the available Skills



The power of abstractions

■ 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.



```

function allLoans()
  loans LoanRec[];
  get loans;
end
  
```

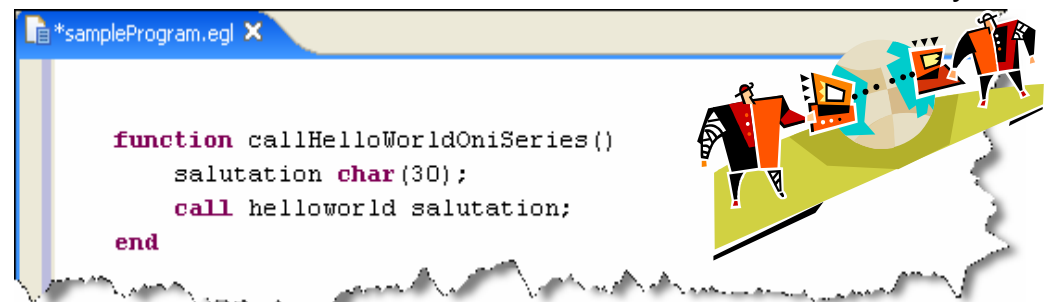
■ User Interface:

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

* Tech Preview

■ Remote Invocation

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



```

function callHelloWorldOniSeries()
  salutation char(30);
  call helloworld salutation;
end
  
```

The power of declarative programming

■ 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.

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

Data Driven Development

*Create an EGL Library,
Then use content assist to
create a record*

```
demoLibrary.egl x
package libraries;

record customer type SQLRecord {tableNames = [{"EGL.COMPANY"}]} end

// basic library
library demoLibrary type BasicLibrary

// Function Declarations
```

```
demoLibrary.egl x
package libraries;

record customer type SQLRecord {tableNames = [{"EGL.COMPANY"}]}
keyItems=["COMPID"]  COMPID int          {column="COMPID"};
COMPNM string        {column="COMPNM", sqlVariableLen=yes, maxLen=30};
COMPDUNS int          {column="COMPDUNS"};
COMPDESC string      {column="COMPDESC", sqlVariableLen=yes, maxLen=254};
COMPLOGO string      {column="COMPLOGO", maxLen=30};
CREDLIM int           {column="CREDLIM"};
COMPBAL decimal(9,2) {column="COMPBAL"};
CREDST smallInt       {column="CREDST"};
COMPDISC smallInt     {column="COMPDISC"};
CREDTERMS smallInt   {column="CREDTERMS"};
PHONE string          {column="PHONE", maxLen=18};
FAX string            {column="FAX", maxLen=18};
WEBURL string         {column="WEBURL", sqlVariableLen=yes, maxLen=50};

end

// basic library
library demoLibrary type BasicLibrary

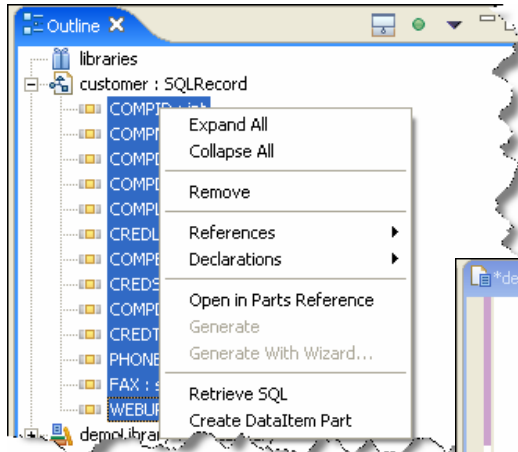
// Function Declarations
function functionName()
end

end
```

*Use the SQL Retrieve wizard
to retrieve the definition from
your System i*

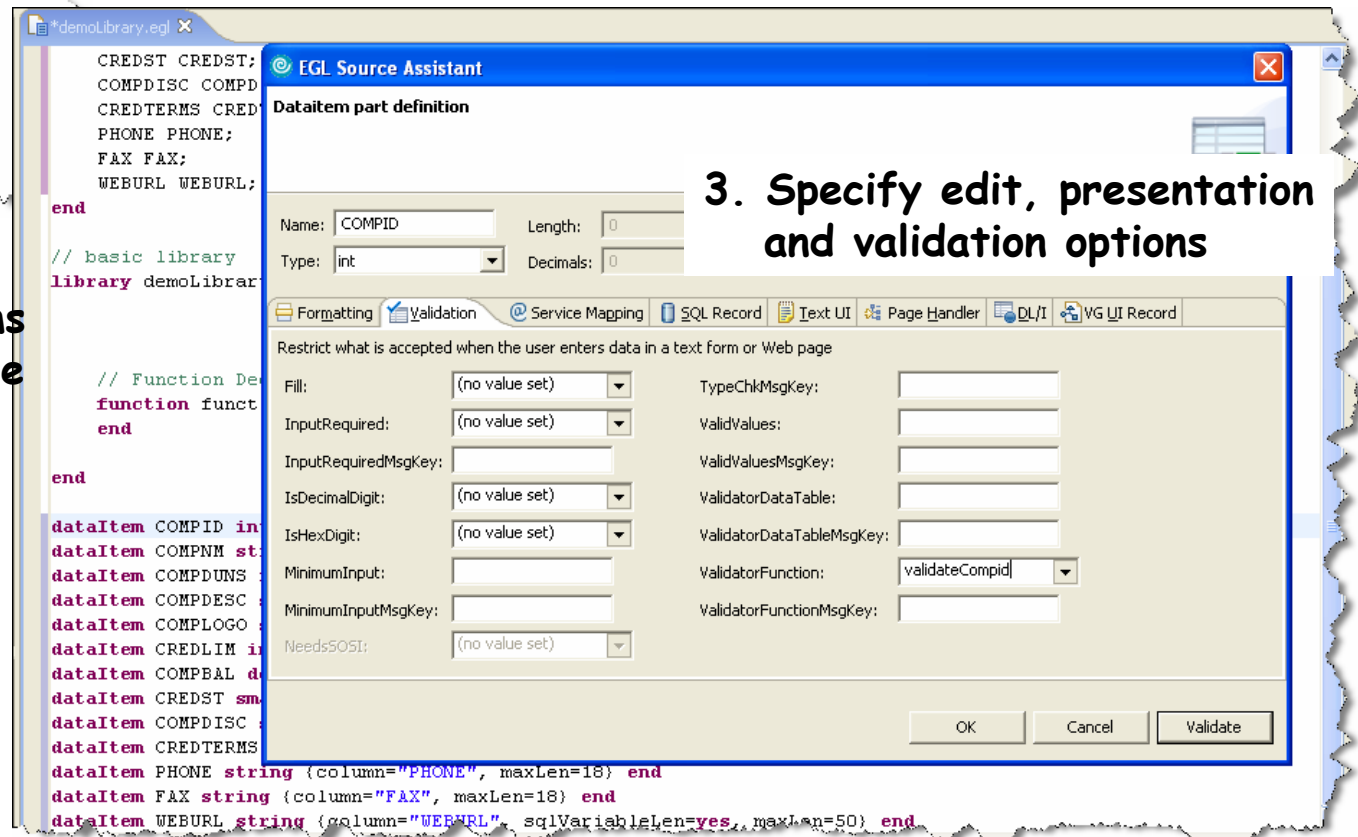


Create Data Items



1. Generate Data Items using the outline view

2. Customize data items using the EGL Source Assistant





The Power of The Language

Robust and Complete

- Rich data types
 - ▶ Simple (int, string, boolean, etc.) or Complex (any, static arrays, dynamic arrays, dictionaries, array dictionaries, etc.)
- 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 resources (Data Areas, Data Queues) access, ...
- 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



Basic Language Constructs

IF/ELSE

```
7  function ifElse(xx char(1) in)
8      writeStdOut("Function: \"ifElse\" -- xx contains: " + xx);
9
10     // if/else statement
11     if (xx == "X")
12         writeStdOut("\tThe condition \"(xx == \"X\")\" is TRUE.");
13     else
14         writeStdOut("\tThe condition \"(xx == \"X\")\" is FALSE");
15     end
16
17     writeStdOut("\tStatement after the If/Else statement");
18 end // end of function ifElse
```

Do While

```
20  function doWhile(aVar int)
21     while (aVar > 0)
22         writeStdOut("In while loop -- aVar contains: " + aVar);
23         aVar = aVar - 1;
24     end // end of while loop
25
26 end // end of function doWhile
```

Basic Language Constructs - Continued

For Loop

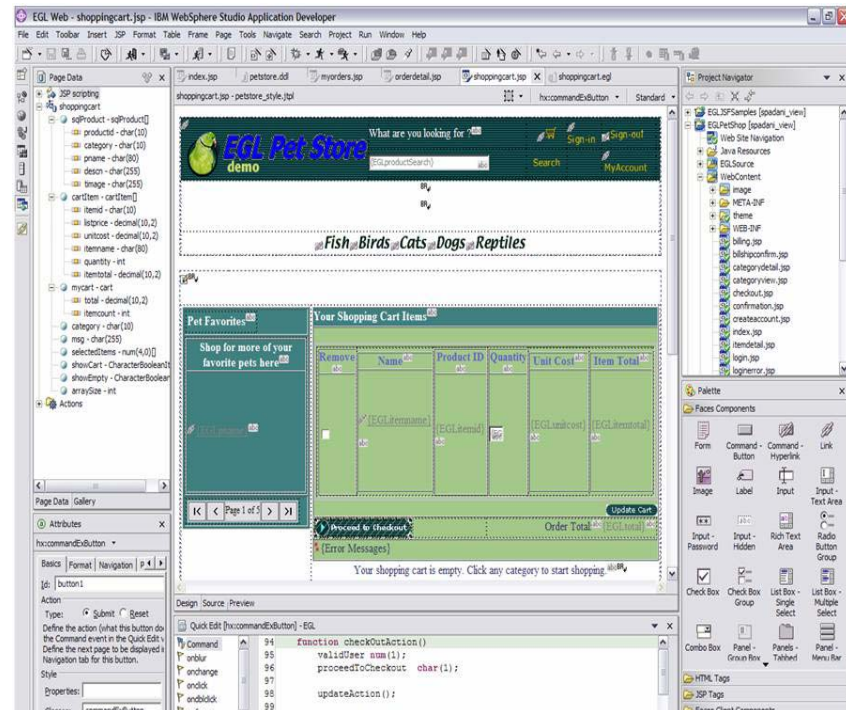
```
28  function forLoop()
29      i int;
30      writeStdOut("This statement precedes the \"FOR\" statement\n");
31      for (i from 1 to 5 by 1)
32          writeStdOut("\tInside \"FOR\" statement -- The value of i is now: " + i );
33      end // end of for statement
34      writeStdOut("\nThis statement is located after and outside the \"FOR\" statement");
35
36  end // end of function forLoop()
```

- Basic structured programming constructs
- Simple, but robust
- Flexible function structure
- Free form code
- Global and local variable support

The power of tools: Robust Page Design

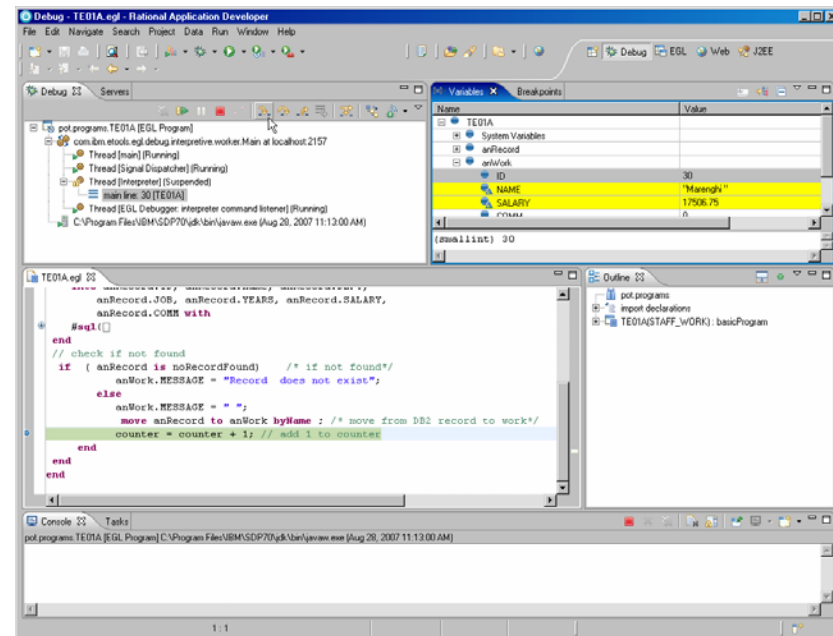
- First Class integration with Page Designer and JSF tools
 - ▶ Drop EGL data structures on JSP:
 - Validation, editing, formatting rules from EGL Data Items applied.
 - Appropriate UI controls rendered pre-bound to data declared in EGL Page.
 - ▶ Server-side event handlers in EGL within context of page designer.

- Integration is totally seamless.
- No Java coding required to wire EGL data to JSF.
- EGL logic can be used to handle user interaction with the JSP.
- AJAX capability built in...partial refresh, etc...
- Portlet support



The power of tools: Debugger

- Debug entire application regardless of ultimate deployment targets:
 - ▶ Transition from debugging JSP's to EGL code to Java to ... and back.
- EGL source debugger:
 - ▶ Breakpoints.
 - ▶ Watch variables.
 - ▶ Change values
 - ▶ Jump to line
 - ▶ Hot-swapping
 - ▶ Extends base Eclipse debugger.
- Remote data access
 - ▶ Relational DB, VSAM files, DL/I data, DQ, DA

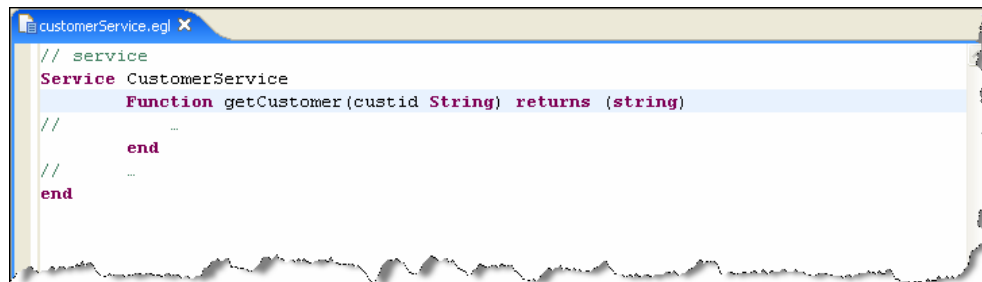


The power of Services

Built into the language

SOA

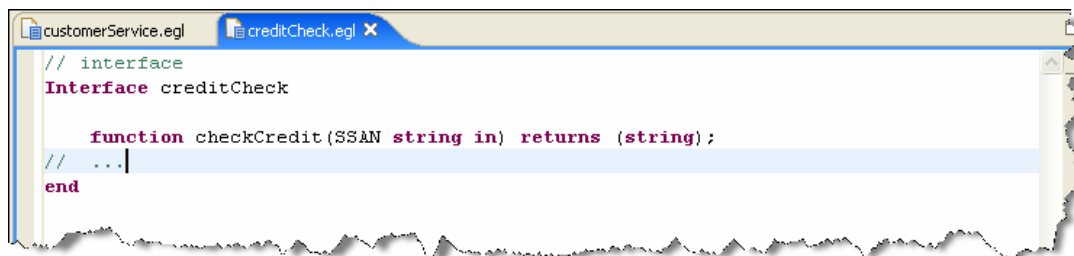
- Service part:
 - ▶ a generatable part containing code that will be accessed:
 - from EGL code by way of a local or TCP/IP connection (*EGL Service*).
 - from any code by way of an HTTP connection (*EGL Web service*).



```
customerService.egl x
// service
Service CustomerService
  Function getCustomer(custid String) returns (string)
  // ...
  end
// ...
end
```

Interface part:

- ▶ Used to access external services as EGL services or simply to provide separation of concern.



```
customerService.egl creditCheck.egl x
// interface
Interface creditCheck
  function checkCredit(SSAN string in) returns (string);
// ...
end
```

The Power of Services

EGL: cross platform language for business oriented services development.

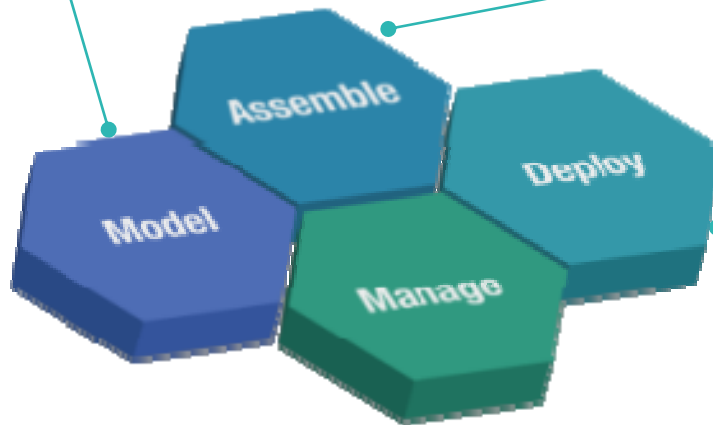


At development time...

- Focus on the business logic
- Implement SOA design elements: services and interfaces
- Leverage existing business developers for new SOA development
- Ignore deployment targets/technology while coding/testing

Leverage external web services...

- EGL Interfaces
 - represent external web services
 - Are created via import from WSDL
 - Allow the EGL developer to stay within the context of the EGL programming model



Deploy EGL services...

To any platform

- Java to WAS/Tomcat/etc.
- COBOL to CICS, i5/OS

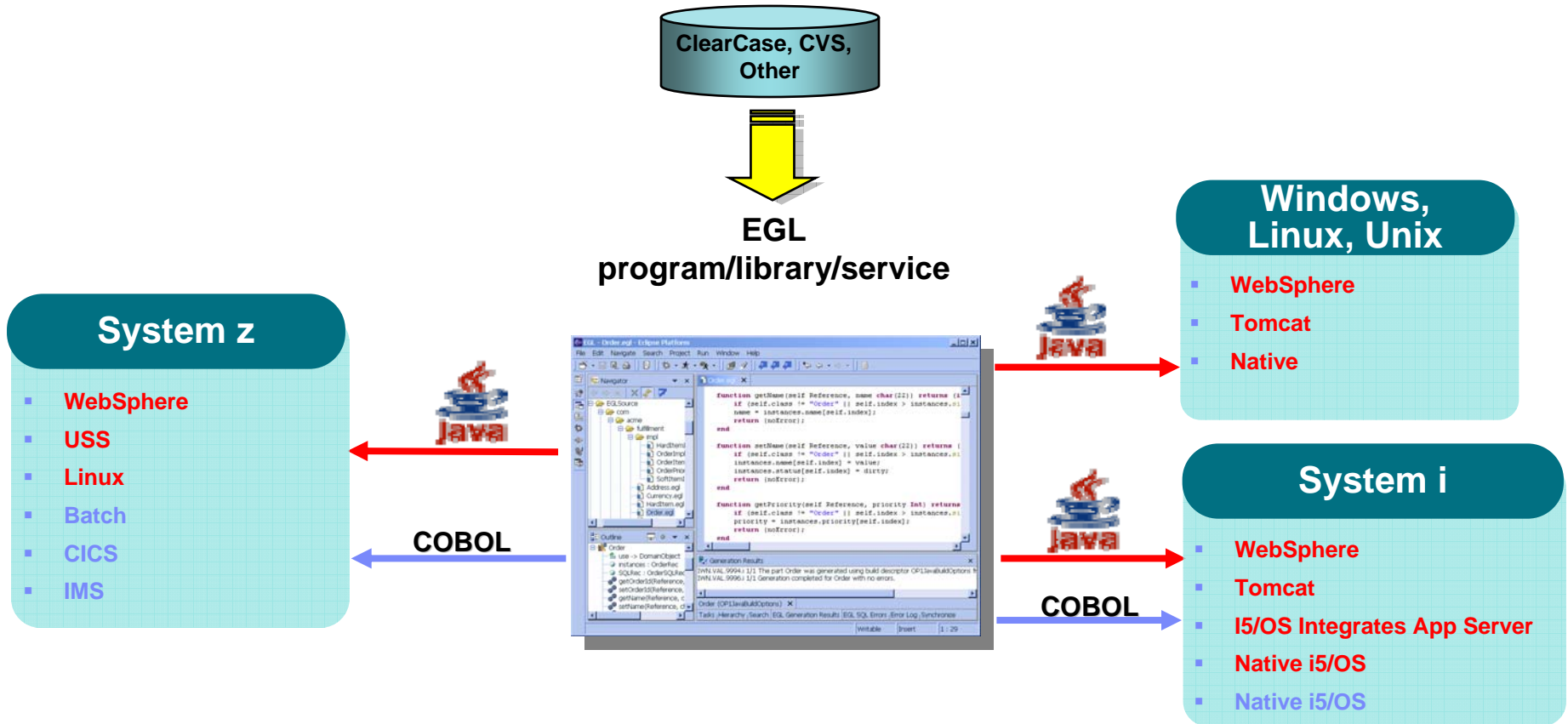
As...

- A Web service (uses SOAP)
- A private service (uses CICS ECI or TCP)
- Other SOA runtimes when they reach critical mass

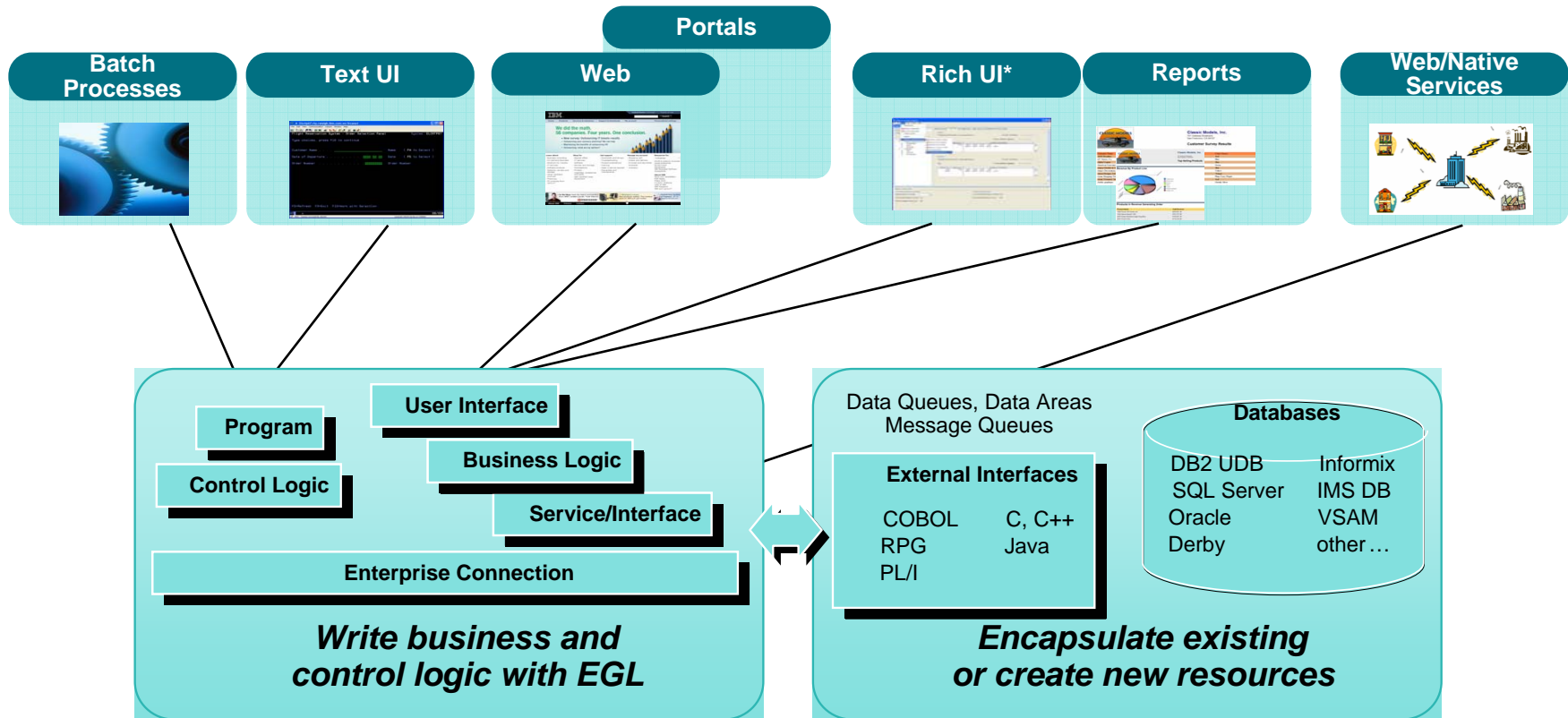


The power of Generation

Platform Flexibility



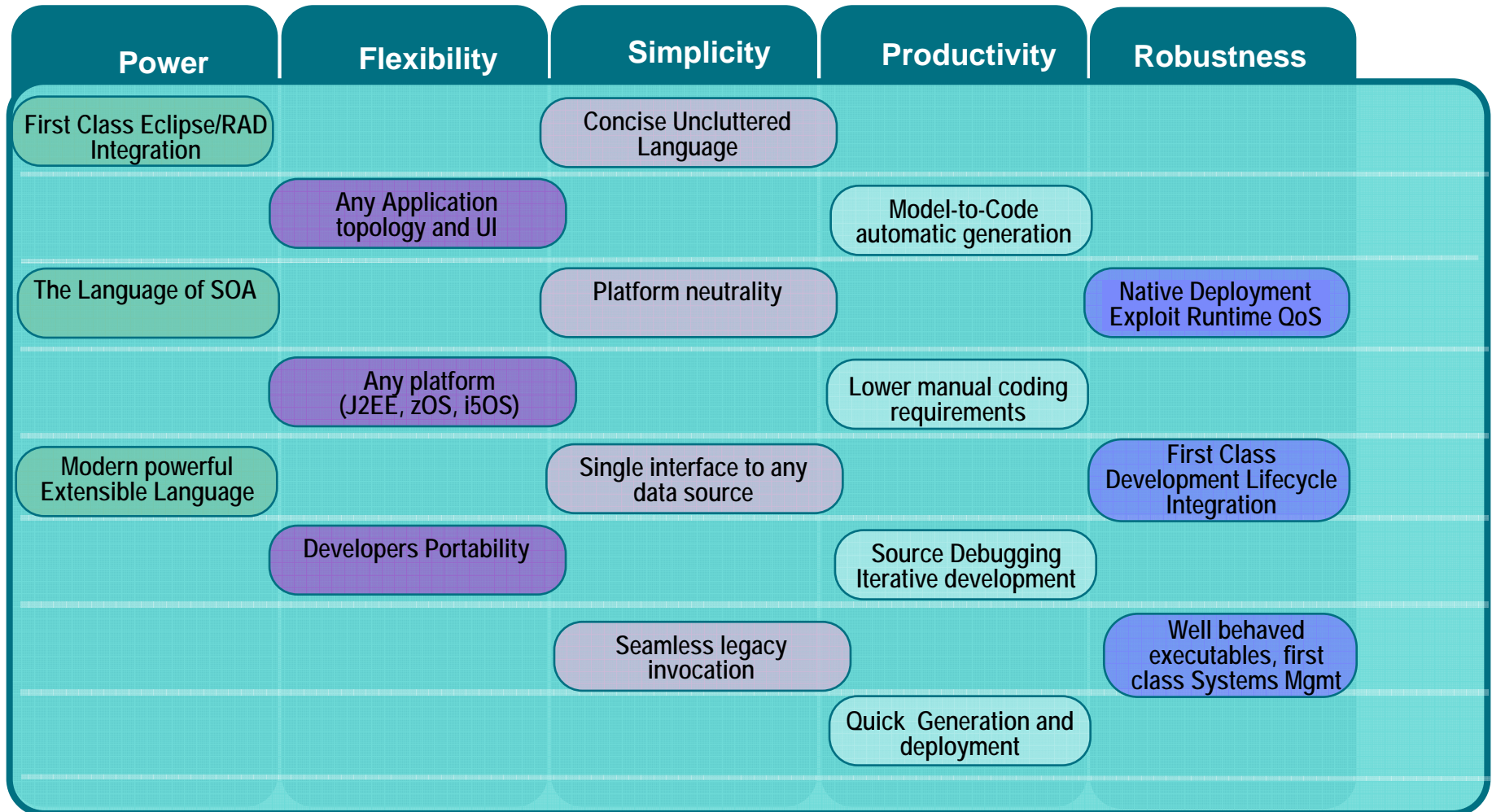
Application flexibility



Why EGL for Application Modernization?

- Platform flexibility
 - ▶ Broad choice of new target environments
- Modern, Robust, Open, SOA ready
 - ▶ Future-proof architecture allows to grow with business requirements
- Easy to learn for Business developers
 - ▶ No need to re-staff, productive in a very short time
- Procedural nature of EGL target has greater “affinity” with Business Languages
 - ▶ Better more natural “mapping
 - ▶ Easier to automate the transformation process
 - ▶ End result is understandable and maintainable

The RBD Difference



Nordisk Copyright Bureau

Deliver copyright registration system over the web



Challenge:

- Registration of copyrighted material in databases was a manual, cumbersome process
- Slow, inefficient reporting copyright information to Producers inquiries

Solution:

- Allow customers to get info through a web portal (reduce manual data entry and costs)

Results:

- Total processing time for new registrations dropped significantly
- EGL's short learning curve, high level of abstraction, and automatic code generation resulted in substantial productivity gains, time savings, and on-schedule project completion.

"A team of three developers completed WebCover application development on schedule, in just three months. If we had used another approach and not JSF/EGL it would have taken much longer than we would like."

- Stephan Kristensen, project leader NCB



Community Health and Counseling Services

Deliver Prior Authorization System over the web



Challenge:

- Respond to government plans for behavioral health managed care system within regulatory compliance demands
- Requirement to track prior authorization for patient visits and integrate it with electronic medical record (EMR)
- No Web development experience nor Java J2/EE skills (only RPG skills)

Results:

- Learned EGL in less than a month
- Developed and delivered web based prior authorization tracking system in less than 3 months
- No need for external resources and total self sufficiency in responding to new application requirements

"It would have been impossible to meet our deadline if we had to learn Java™ before developing the application."

- Valery Levy MIS Manager CHCS



Morpheus

Transform a manual/paper process into a web system

Challenge:

- The manual, paper based insurance quote process for major automobile dealerships clients (BMW, Renault, Peugeot, etc.) was becoming a competitive handicap.

Solution:

- A web based e-business application, providing direct access from dealerships to Insurance systems, to rapidly gather accurate quotes.

Results:

- EGL's short learning curve, high level of abstraction, and automatic code generation enabled Morpheus, a System Integrator based in the UK, to leverage developers of different backgrounds in delivering the system to the Client in record time (less than 100 days!).
- The new system virtually eliminated costly errors, and delivered quotes in record time, with great customer satisfaction.

"EGL allowed us to staff the application project with developers of different skills and deliver the system in just 100 days!! We are looking forward to our next project..."

- Bleddyn Williams, Director of eBusiness Solutions

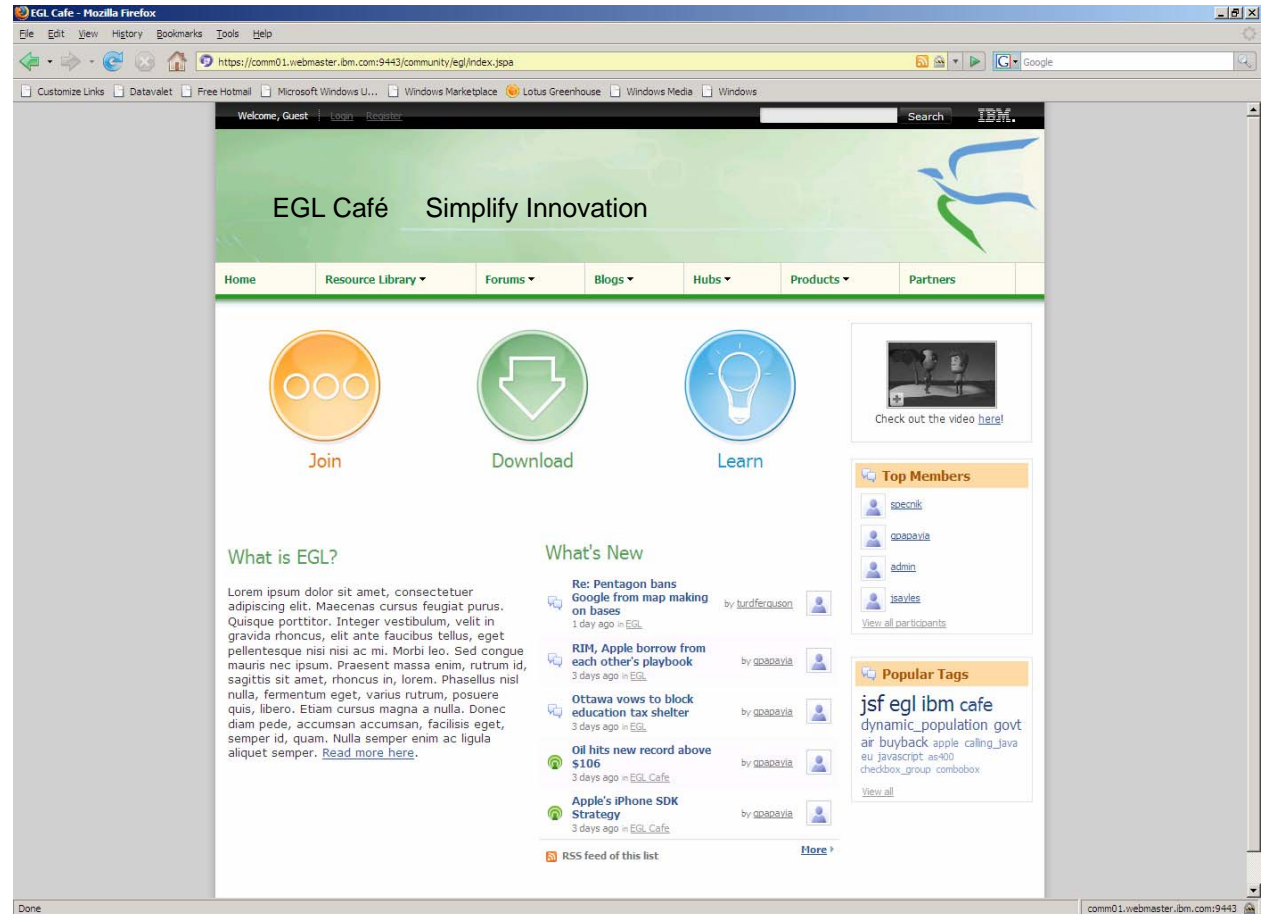
EGL Momentum

Hundreds of new EGL users, growing network of EGL Business Partners



Wisdom of the Crowd – EGL Cafe

- Join
 - product trials
 - Sample code
- Download
 - product trials
 - Sample code
- Learn
 - Documentation Corner
 - Jon's Corner – Learn
 - Articles, Books
 - About Products
 - Sandbox
- Participate
 - Forums
 - Blogs
 - Ratings
 - Reviews
 - Share code
- Partners
- Events



Getting Started With EGL

- ▶ Take a tutorial
- ▶ No Charge 2 week Distance Learning IBM enablement
 - On-Site Training
 - Project planning & architecture
 - Pilot Project
- ▶ Ongoing support

Partners or IBM

Distance Learning

- Week 1 – 4 days
 - ✓ 2 hours lecture
 - ✓ 4 hours lab
- 1-2 week break
- Week 2 – 4 days
 - ✓ 2 hours lecture
 - ✓ 4 hours lab
- Extensive instructor interaction

<http://www-128.ibm.com/developerworks/offers/lp/r/rbdetws>



Get started with the System i Sandbox

System i Sandbox

Coming
in May

*Examples and best practices provide low-risk,
practical, hands-on path to understanding*

www.ibm.com/rational/modernization



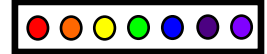
Full version software trials
'Try online' hosted System i environments
Tutorials
Architectural Guidance



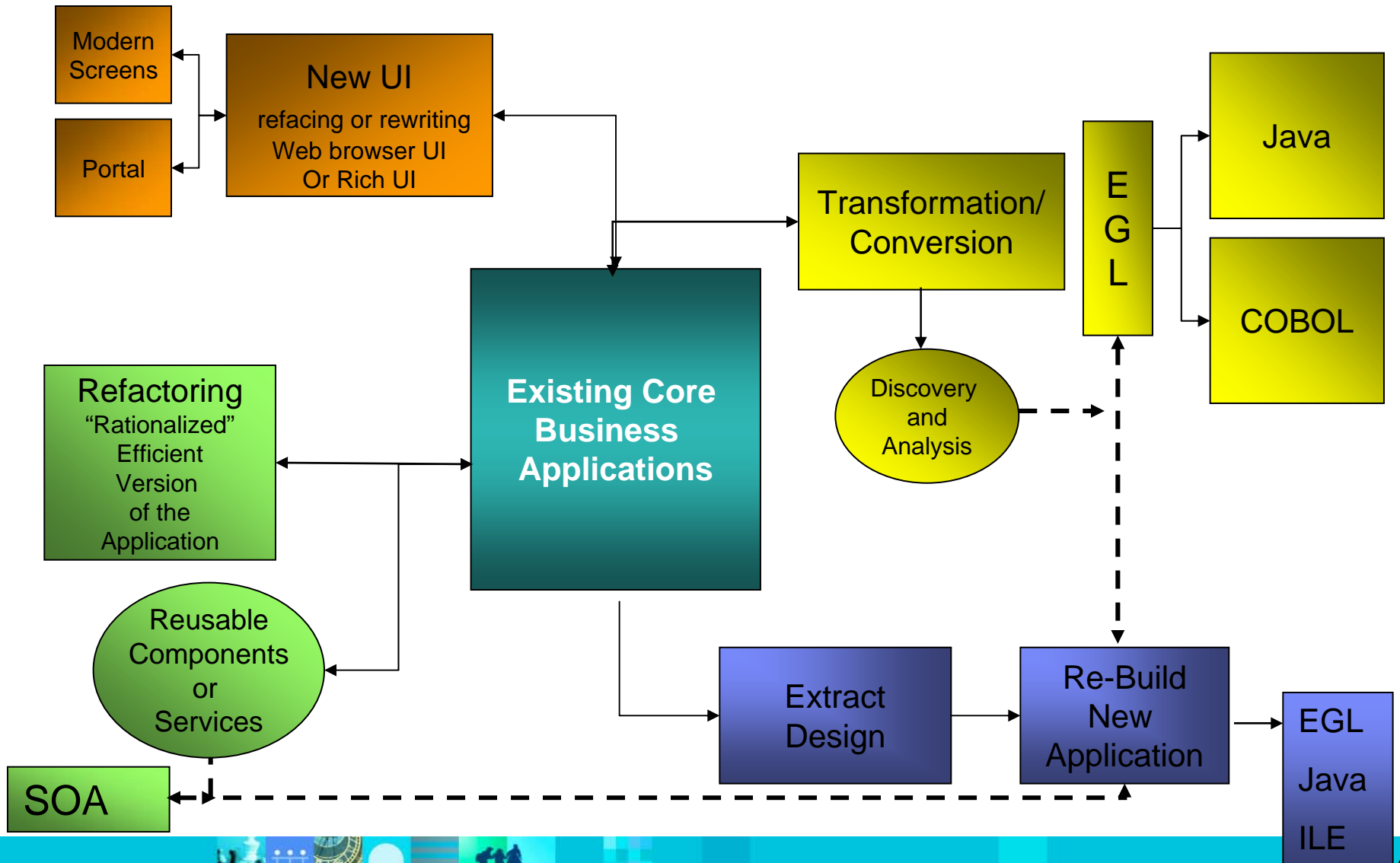
Agenda



- ▶ Rational and System i
- ▶ Today's Realities
- ▶ Enterprise Modernization
- ▶ New Announcements
- ▶ EGL
- ▶ **Getting Started**
- ▶ Q&A



Spectrum of Options for Application Modernization





Modernize Your Development Investments

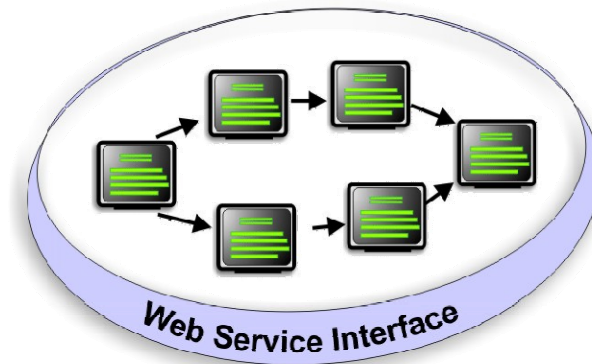
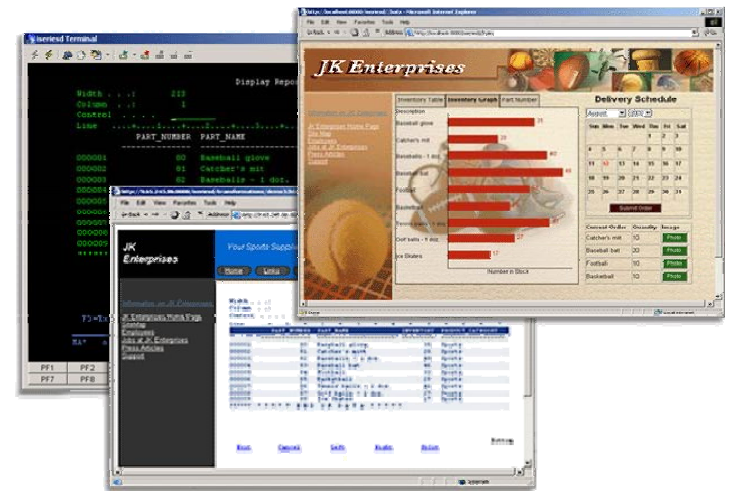
Deliver impressive UIs quickly with UI revitalization

Use Host Access Transformation Services (HATS) to

- ▶ Quickly and easily create Web, portal or rich client applications that provide an easy-to-use GUI for your green-screen applications
 - Low skills requirement
 - Highly customizable
 - Iterative development process
 - Transformation “on the fly”
- ▶ Extend terminal application tasks as Web services

Benefits

- ▶ Extend host application to new users
- ▶ Improve the navigation of your host application
- ▶ Reuse your existing assets in a Service Oriented Architecture



Reface an existing UI with HATS



- **Quick ROI - Host applications can be quickly deployed with a GUI**
- **Low cost - No need to rewrite application**
- **Low risk – Leverage Open, Proven Platforms**
- **Increase productivity and reduce training costs**
- **Improving work flow from multiple applications**

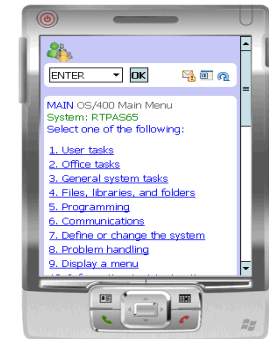


- Integration at the desktop with other Eclipse applications
- Client side processing
- Rich set of user interface widgets
- Built on the standard, open Eclipse foundation



- Zero footprint
- View through your favorite browser

Mobile New!



- Access host applications from mobile devices

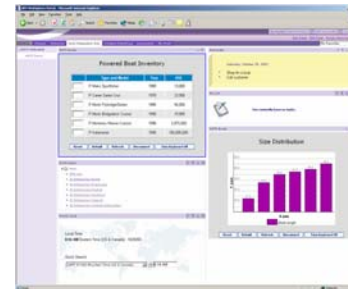
3270 or 5250
Data stream

Web Service



- Build self-service transactions

Portal



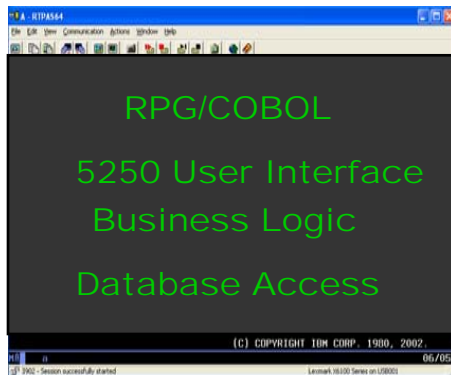
- Integration at the glass
- Click-to-Action support





Leverage Existing Applications with HATS and RBD

Existing Programs



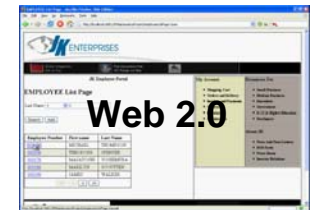
HATS for 5250 Applications



Web Service



EGL



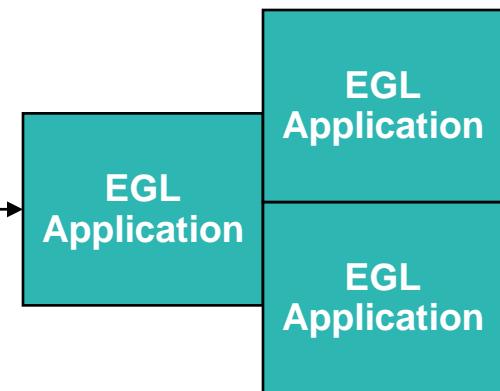
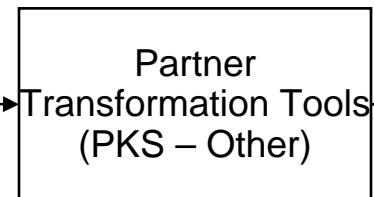
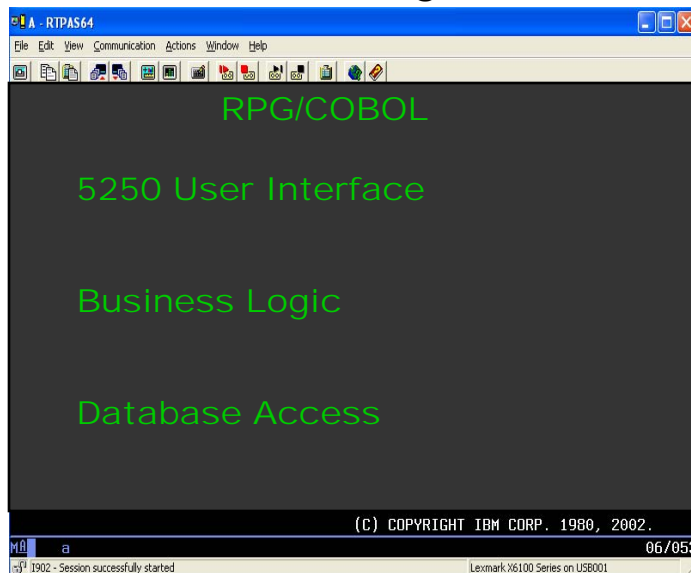
Web Services
Modern Applications
Document Printing
much more...

- Leverage existing 5250 applications with HATS (including 3rd party ISV applications).
- Generate Web Services from HATS and consume them in custom Web 2.0 applications using EGL.



Modernize your Application through Transformation

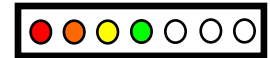
Monolithic Programs



EGL

- **Eliminate Skills silos – allowing IT to freely shift resources across projects according to business priorities**
- **Create applications that are not locked into a specific computing environment**



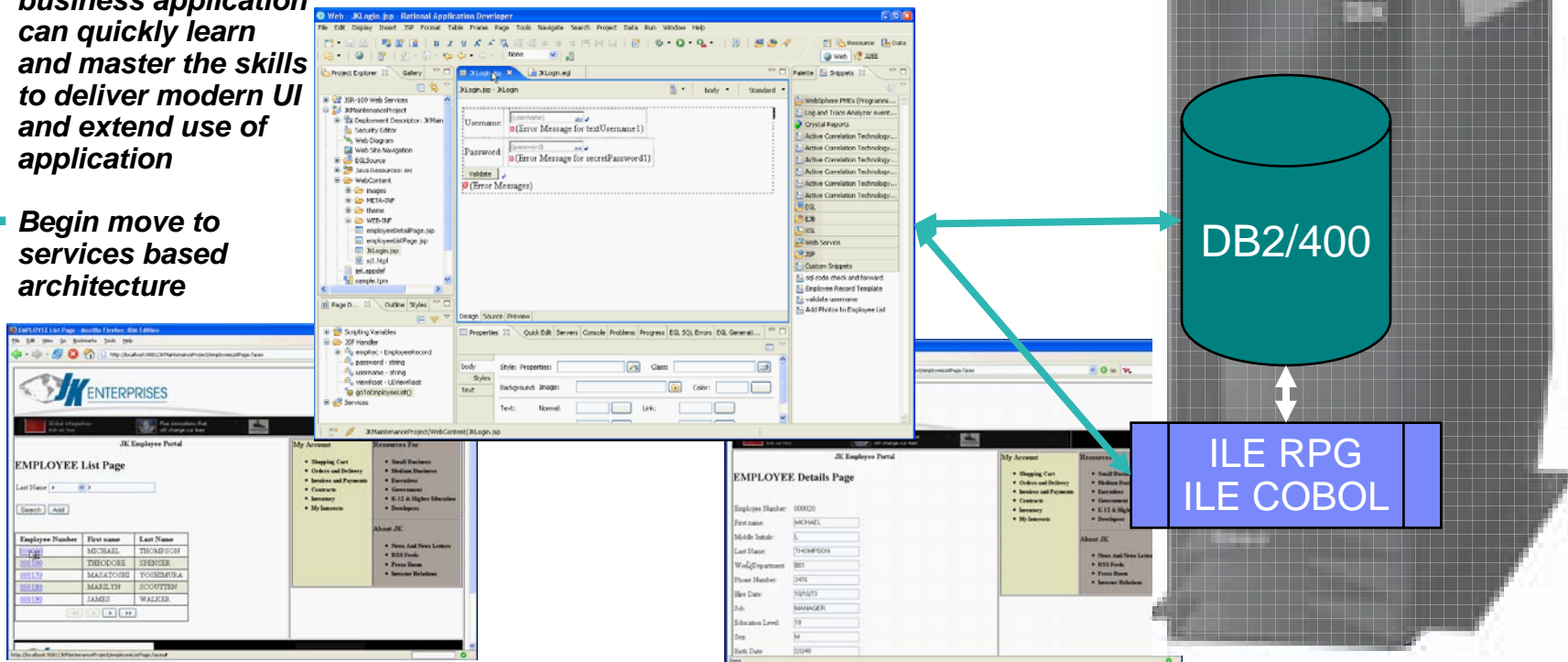


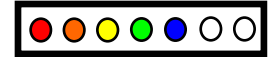
Rewrite the UI with Rational Business Developer

- **Leverage existing core business applications**
- **Business Developers who know existing business application can quickly learn and master the skills to deliver modern UI and extend use of application**
- **Begin move to services based architecture**

Rapid Web & Rich Client UI Enablement

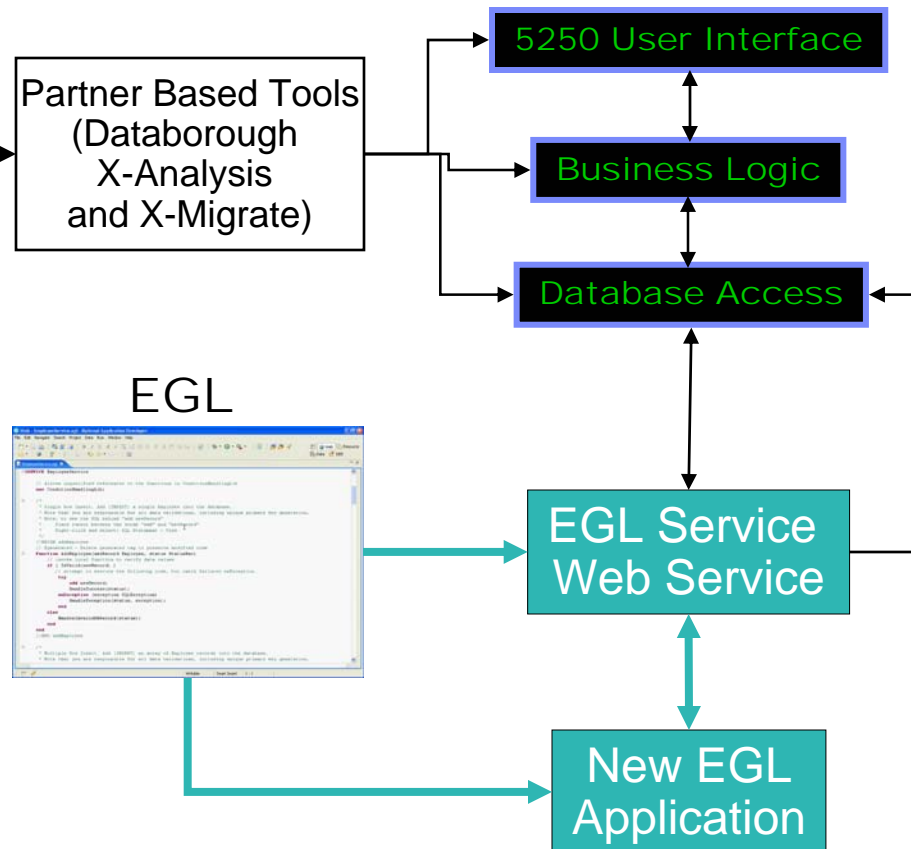
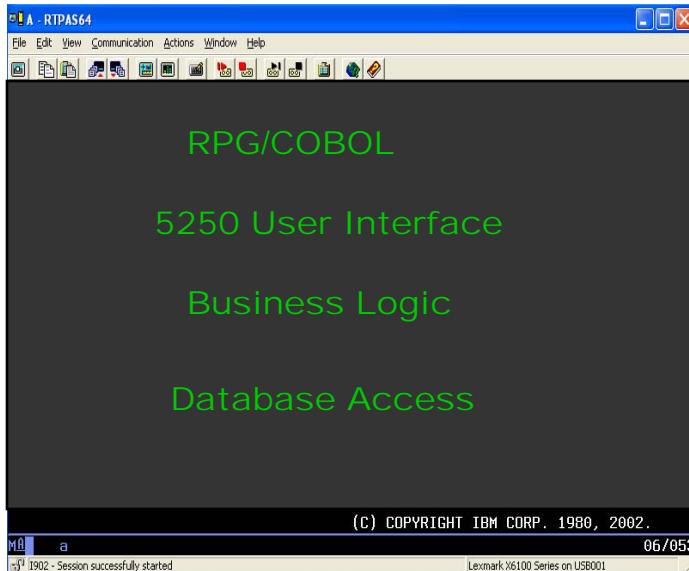
EGL





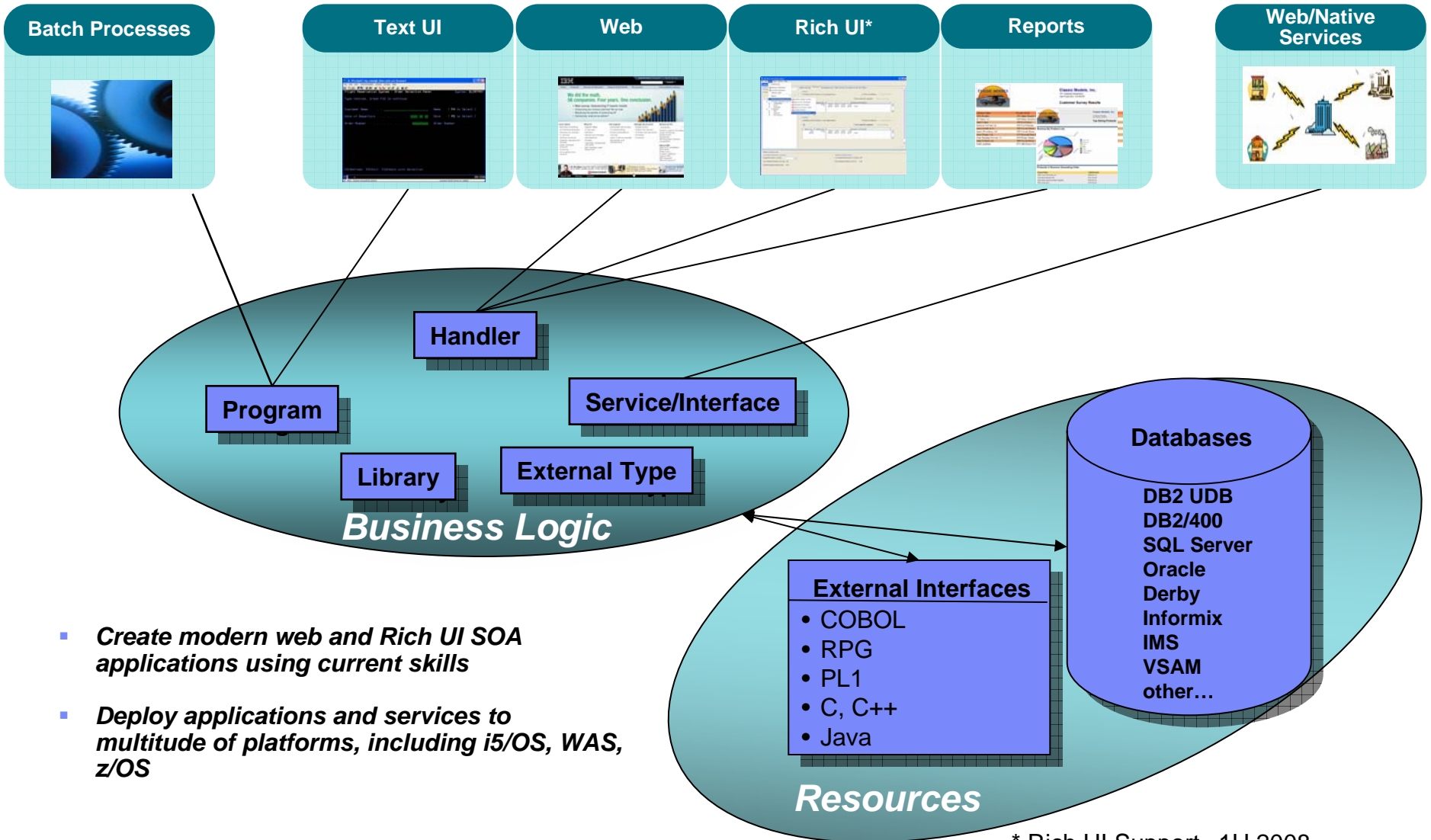
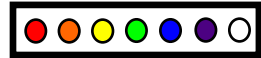
Modernize your architecture through refactoring

Monolithic Programs



- **Application Rationalization**
- **Create reusable components or services**
- **Fast delivery of new business solutions with available resources**
- **Significantly simplify maintenance, lower error rates, higher quality**
- **Remove barriers to move to SOA**

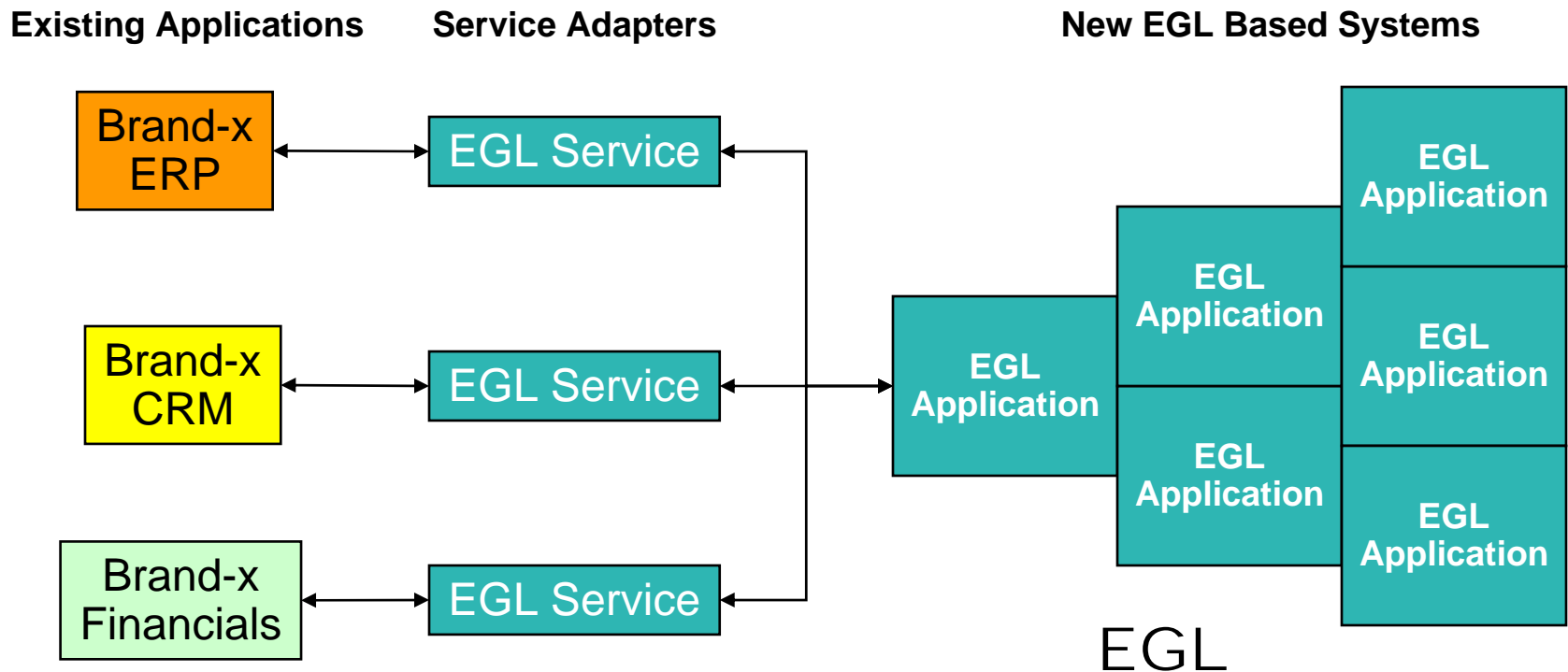
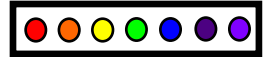
Build or rebuild an application with RBD



- *Create modern web and Rich UI SOA applications using current skills*
- *Deploy applications and services to multitude of platforms, including i5/OS, WAS, z/OS*

* Rich UI Support –1H 2008

Use EGL to link to packaged applications



Microsoft, i5/OS, Unix,
Linux, others

- *Leverage vendor provided and supported API's*
- *Leverage vendor provided web services*
- *Improved performance with EGL services*



Summary



Rational. software

**Governing the business process
of software and systems delivery**

*Decades of proven process expertise
and customer success*



- To be flexible, you must mature and modernize your IT tools and processes
- Companies face significant challenges modernizing:
 - ▶ No electronic inventory of current assets
 - ▶ Complex, tightly coupled architectures
 - ▶ Skills lock-in
 - ▶ Islands of development
 - ▶ No flexibility for new investments
- Rational offers many incremental ways to modernize with quick ROI on your schedule

You can get started today. We can help!

For more information: <http://www-306.ibm.com/software/rational/announce/systems/i>



IBM Rational Software Development Conference 2008

June 1 – 5, 2008; Orlando, Florida



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- Over 300 sessions – 14 tracks
- Executive Summit 2008
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- Unlimited networking opportunities
- IBM Solution Center
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