IBM Software Group

Building and Streamlining your Processes for Business Applications

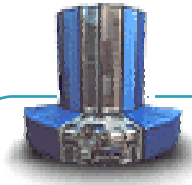
Bringing CICS applications to new levels with CICS 4.1 and Rational Developer for System z

David Myers
Product Line Manager, Rational AD for System z

Rational. software

Change is the new norm

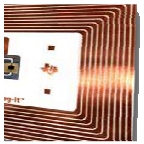
There are 1 billion camera phones in use today



IBM Sequoia Super Computer…
It would take the entire population of the earth, about six billion, each of us working a handheld calculator at the rate of one second per calculation, more than 320 years to do what Sequoia can do in one day.

"8 of 10 CEOs see significant change ahead"
- 2008 IBM CEO Survey

The internet of people is over one billion strong. The internet of things is almost one trillion.



By 2010, there will be 30 billion RFID tags in circulation

Soon there will be over 2 billion people on the web

China sends more text messages in a week than the U.S. does in 1 year

Change can be ~~very disruptive~~ an opportunity

IT skills shortage reaches highest level in 10 years

All software systems crashed due to software bug when F-22 flew over international dateline

50% of outsourced projects are expected to under perform

"The gap between expected change and the ability to manage it has almost tripled since 2006."
– 2008 IBM CEO study

COBOL thwarts California's "Governator"

North Carolina Jobless Claims Crash State's Web Site

Ohio election web site shut down after being hacked

View fashion shows and collections on your iPhone

Malta is building a smart grid to link the power and water systems

Mobile phone provider "3" launches new handset to allow users to make free calls via Skype

Is your IT infrastructure flexible enough?

"The message for IT is clear; business needs and expects greater agility from IT. A new approach to IT delivery models and sourcing options is required that allows IT organizations to be more responsive to the needs of the business."

– Gartner, October 14, 2008, "Changing the Cost Structure of IT Will Become a Business Imperative for Most CIOs"

Economic crisis is increasing pressure on cost

Focus on IT budgets

IDC Lowers IT Spending Forecast for 2009

*"Because of the worldwide financial crisis, IDC expects **spending on technology by enterprises to grow by just 2.6%** next year. IDC has also revised **the 2009 US spending growth rate to just 0.9%**. Cisco, Nortel, Dell and others have already indicated that they've seen or expect to see IT spending drop."*

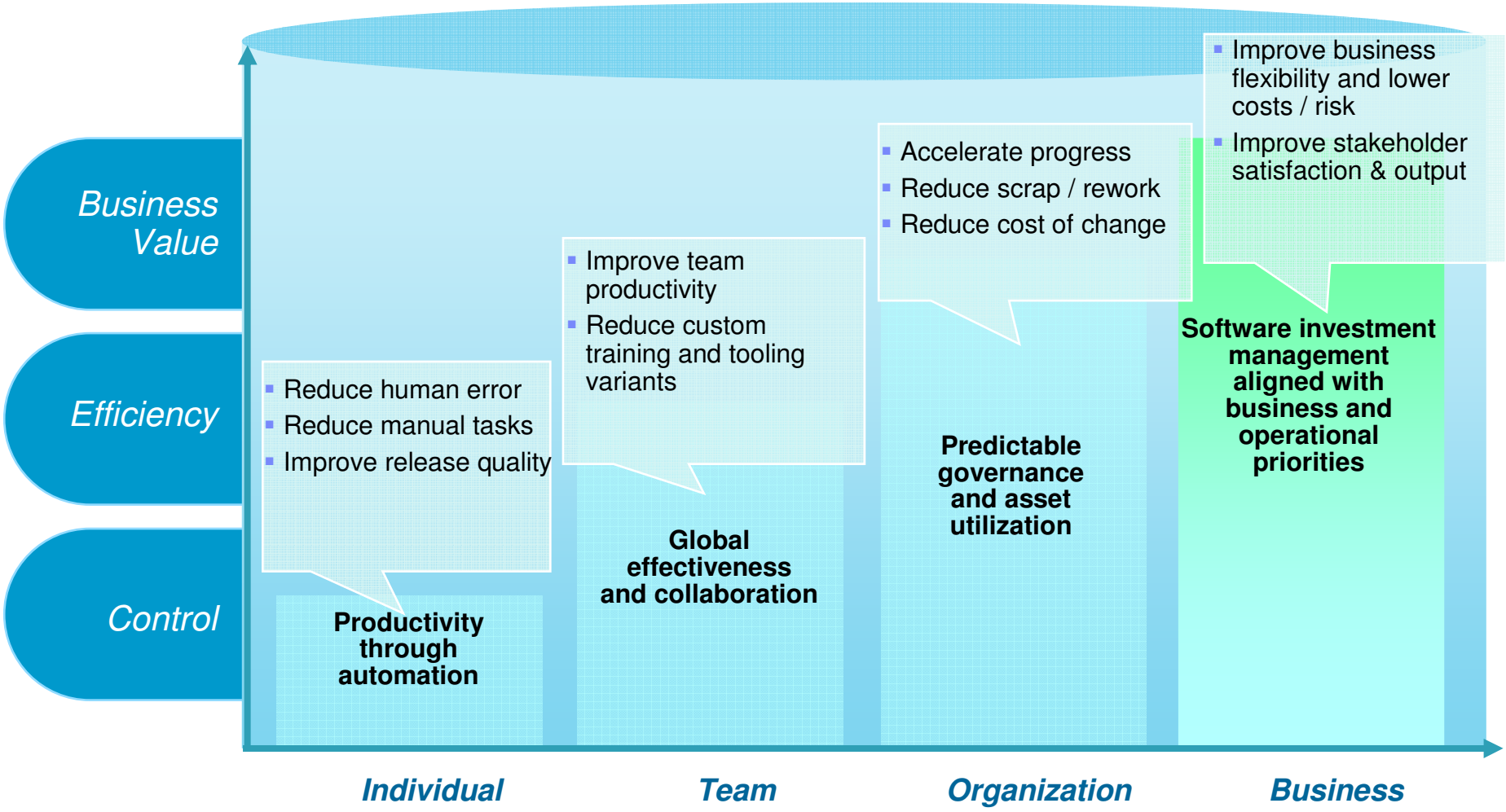
– ZDNet UK, November 13, 2008
"IDC's Analyst firm cuts IT-spending outlook for 2009"

Changing the Cost Structure of IT Will Become a Business Imperative

*"The message for IT is clear; business needs and **expects greater agility from IT**. The current approaches to project prioritization, resourcing, agility and governance are clearly not satisfying customer needs. A **new approach to IT delivery models and sourcing** options is required that allows IT organizations to be **more responsive to the needs of the business**."*

– Gartner, October 14, 2008
"Changing the Cost Structure of IT Will Become a Business Imperative for Most CIOs"

Treat your software as a strategic business process



Enterprise Modernization solutions

Lowering the total cost of application development and delivery

Modernize Applications

Empower People

Unify Teams

Optimize Infrastructure

- **Increase flexibility by revitalizing existing application portfolio**
- **Boost productivity and accelerate innovation with modern skills**
- **Maximize organizational agility by bridging development silos**
- **Defer capital expense by optimizing application infrastructure**

Rational Software Delivery Platform

CICS is at the Heart of Smart Business

CICS Explorer

Enhanced CICSPlex SM workload management

New SPI commands for managing the CSD

Discovery Library Adapter

Improvements to XML parsing in CICS

Large file hosting

Performance Improvements

IPv6

IPIC Transaction Routing

MQ Group attach

Application Bundles

Service Component Architecture

Web Services Addressing

"Faster and easier to respond to change"

Business event processing

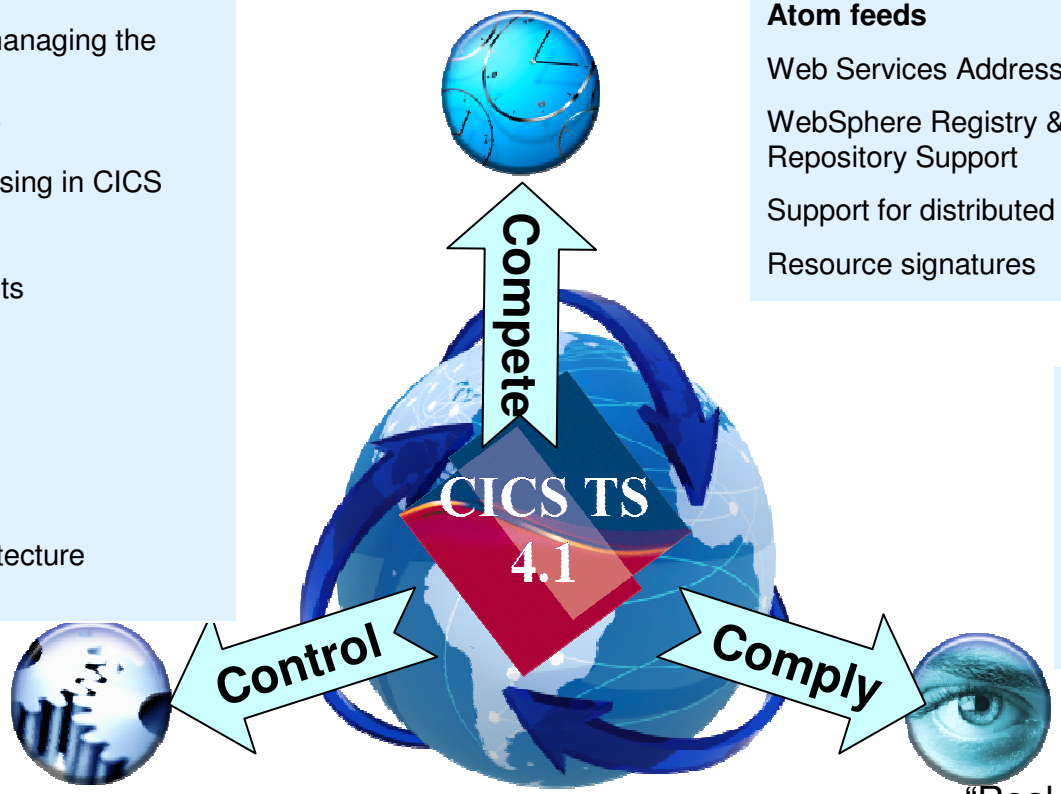
Atom feeds

Web Services Addressing

WebSphere Registry & Repository Support

Support for distributed identities

Resource signatures



Business event processing

Atom feeds

RESTful interfaces

Service Component Architecture

Java 6

"Greater efficiency and reduced costs"

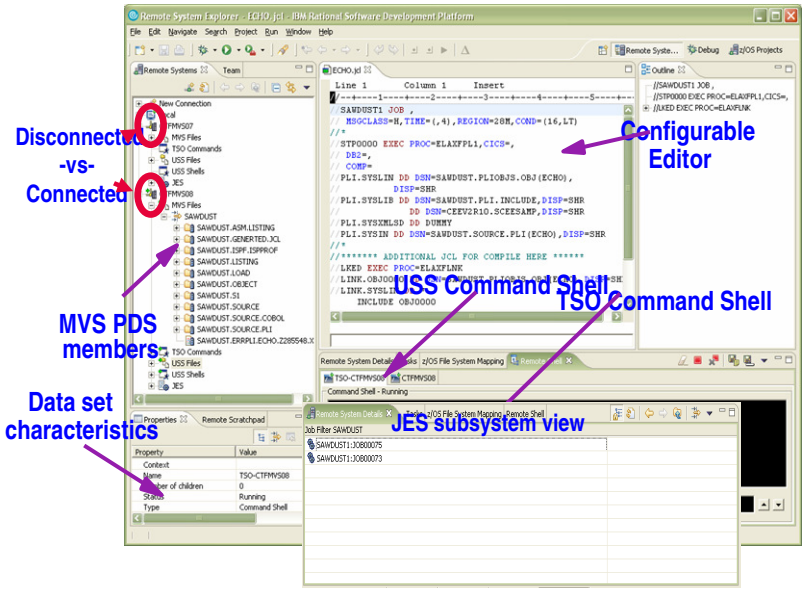
"Real-time visibility for smarter decisions and actions"

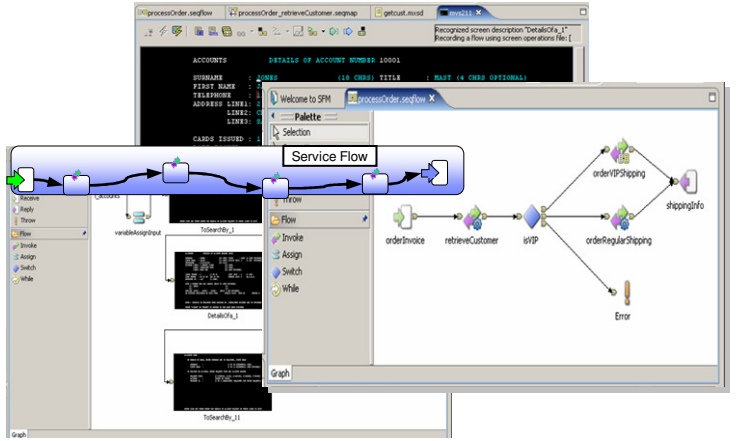
CICS Transaction Server V4.1
http://ibm.com/cics/tserver/v41/

"CICS is probably the most successful piece of software of all time . . . It is the mainstay of business computing throughout the world . . . Millions of users unknowingly activate CICS every day, and if it were to disappear the world economy would grind to a halt." ***Phil Manchester, Personal Computer Magazine***

Rational Developer for System z (RDz)

- **What is RDz**
  - Eclipse-based IDE speeding modern composite (SOA) application development
- **RDz supports Enterprise Modernization**
  - Links WAS and core system z processing
  - Supports common IDE for COBOL, PL/I, C, C++, HLASM, Java, EGL and web services
  - Transforms UML to COBOL source code
  - Provides interactive access to z/OS for development, debug, job generation, submission, monitoring, command execution
  - Supports new and existing runtimes (CICS, IMS, Batch, USS, DB2 SP, WAS)
- **RDz supports SOA**
  - Enables CICS and IMS applications for web services and SOA
  - Supports for J2EE, JCA, XML, web services

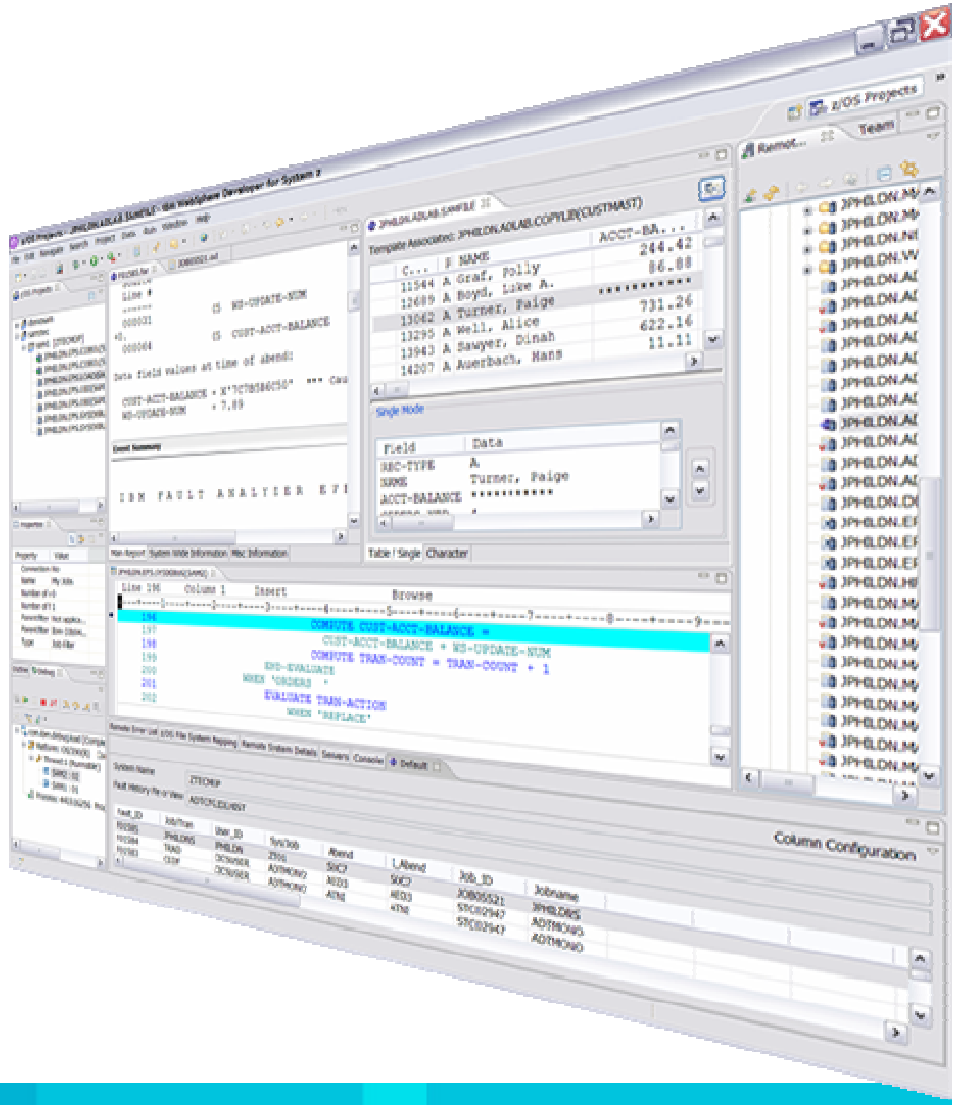




RDz and PD tools create a single developer desktop

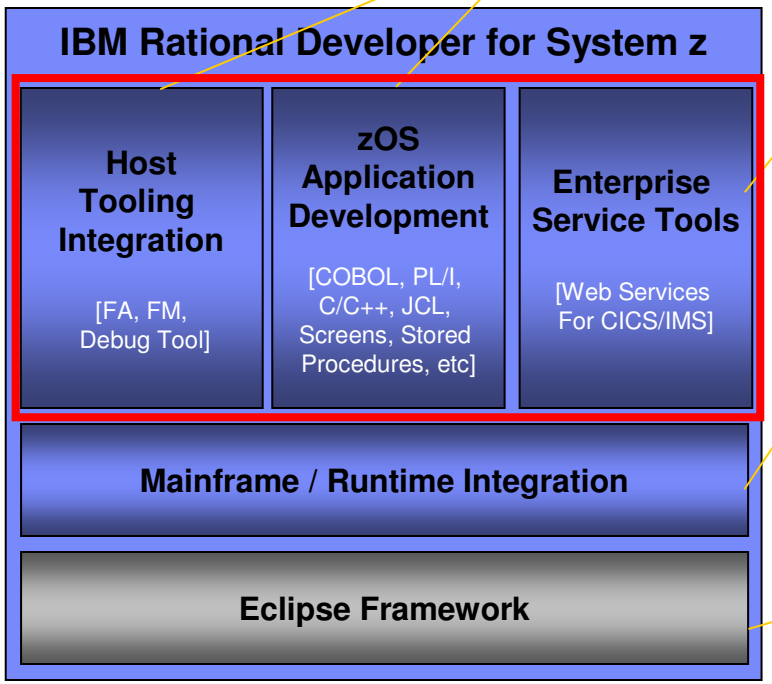
Supporting development and testing of SOA and composite applications

- Optimize and manage the performance of application resource
- Compile, debug and test applications, and convert code quickly and easily
- Analyze and correct application failures with minimal down-time
- Manage and generate data files, including XML data files
- Extract/manipulate production data for testing applications (DB2, IMS, VSAM) and provide data privacy functionality
- Conduct stress, performance, regression, function and capacity planning tests



IBM Rational Developer for System z V7.6 – core capability

Lifecycle Tools
- Debug zOS applications from the workstation as they execute live in the remote runtime
- Read/Write/Update VSAM datasets via integration with IBM File Manager
- Access IBM Fault analyzer reports for analyzing ABENDS and associating back to source code



Traditional Development

Development Environment
- Connect to z/OS systems
- Work with z/OS resources like COBOL, PL/I , C, C++, JCL, assembler, etc.
- Perform dataset management actions like allocating datasets and migrating datasets
- Perform typical edit, compile, and debug tasks on remote z/OS resources from the workstation
- Create, build, and catalog DB2 stored procedures on zOS
- Compile and test programs locally to ensure correctness

Screen design
- Visually create, modify, build, and deploy BMS maps sets or MFS/IMS maps remotely or on the local workstation

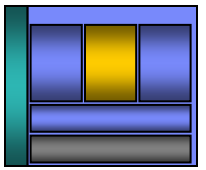
Code Generation
- Generate program code from UML, easily integrated into web service applications

zOS Web Service and Flow Creation
- Implements SOA and Web Services for CICS and IMS COBOL and PLI applications
- Bottom-up/Top-down/meet-in-the-middle COBOL to XML mapping support
- Integrated COBOL and PL/I XML converters, XML schemas, and WSDL generation
- Service Flow Modeler to build/deploy service flows out of your existing Commarea, Channel, MQ, and Terminal CICS applications.
- Service deployment modeling tools

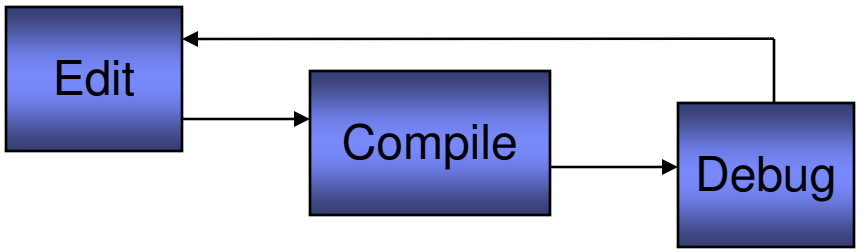
Mainframe / System z Runtime Support
- Access to host SCMs such as Team Concert, CCz, SCLM, Endevor, and ChangeMan
- Framework for writing/deploying custom SCM integration code
- SCM process integration (JCL, TSO, ISPF applications) via HATS and Menu Manager
- CICS Explorer with Application Deployment Manager
- Interact with the Job Entry Subsystem (JES) to submit jobs, monitor jobs, and review job output

Eclipse Platform and Java Development
- Plug-in integration framework
- Java Development (useful for System z Java development)
- Distributed team integration
- Database access/search tools

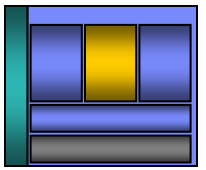
Reduce application maintenance time and cost…



- Work with existing host resources in a workstation environment
- Integrate development with change management
- Experience productivity gains with modern development tools
  - Quickly perform mundane tasks with embedded code insight
  - Generate code for faster application development
  - Automatically identify code quality problems
- Ensure proper governance of application development



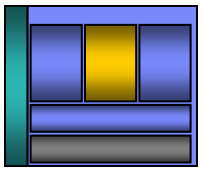
RDz improves zOS application development



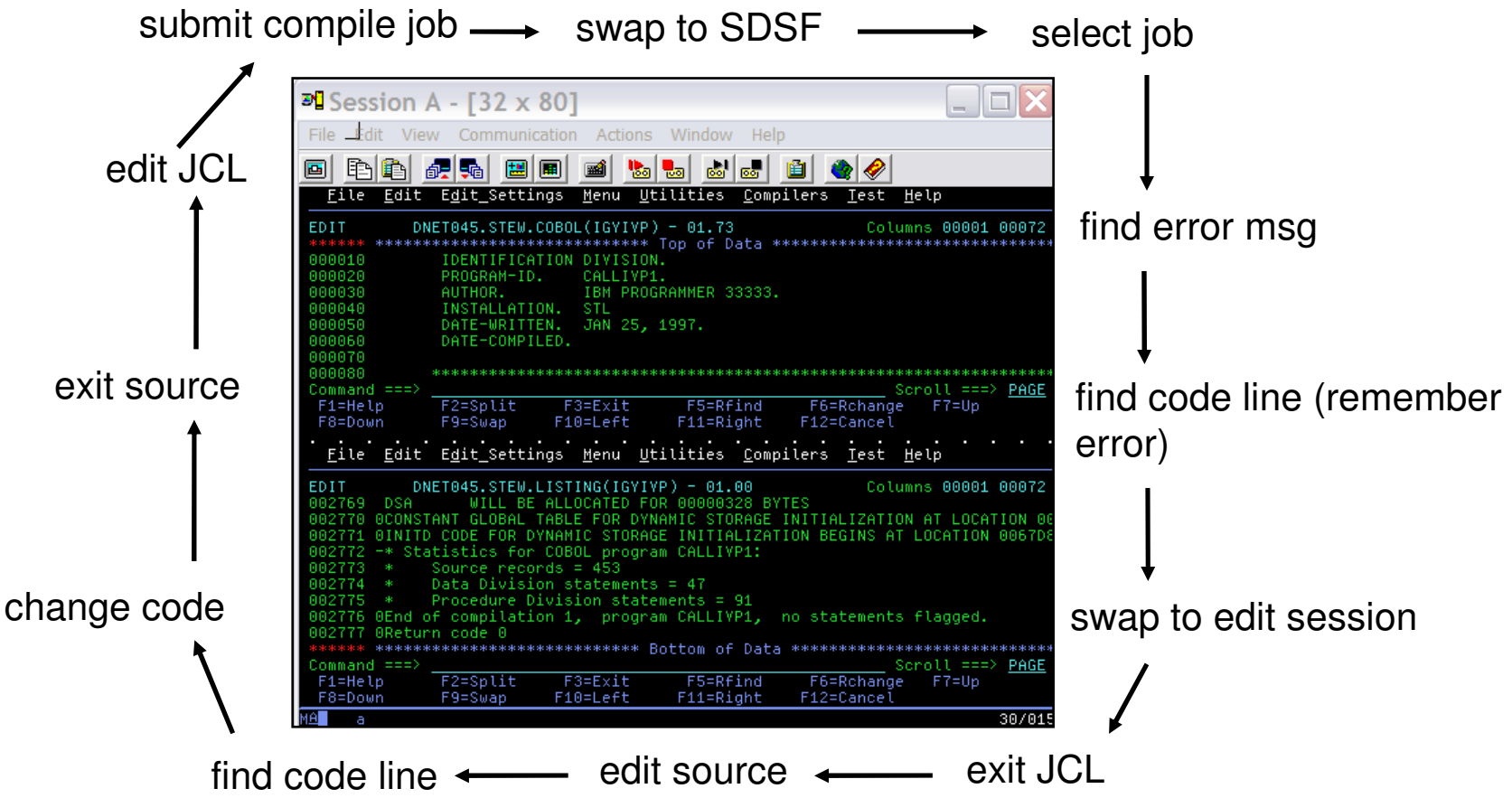
- Modern UI for z/OS developers reduces training costs, more attractive to younger developers
  - Windows Explorer-like feel simplifies interaction with z/OS
    - Point and click to allocate, copy, move z/OS files and datasets
- Eclipse-based open source IDE increases productivity
  - Enables more relevant information to be readily available
  - Specialized editors and code generation wizards speed development
    - Code assist for COBOL, PL/I, C/C++, Visual editors for BMS and MFS maps
    - Generate code from UML
- Workstation syntax checking reduces host CPU usage
  - Fewer COBOL and PL/I program compiles required on z/OS
- Integrated business development language reduces training costs and increases productivity
  - EGL lowers skill requirements for Web 2.0 development and multiplatform development

Benefits: Productivity, higher quality code, reduced training, MIPS offload

ISPF 3270-based development

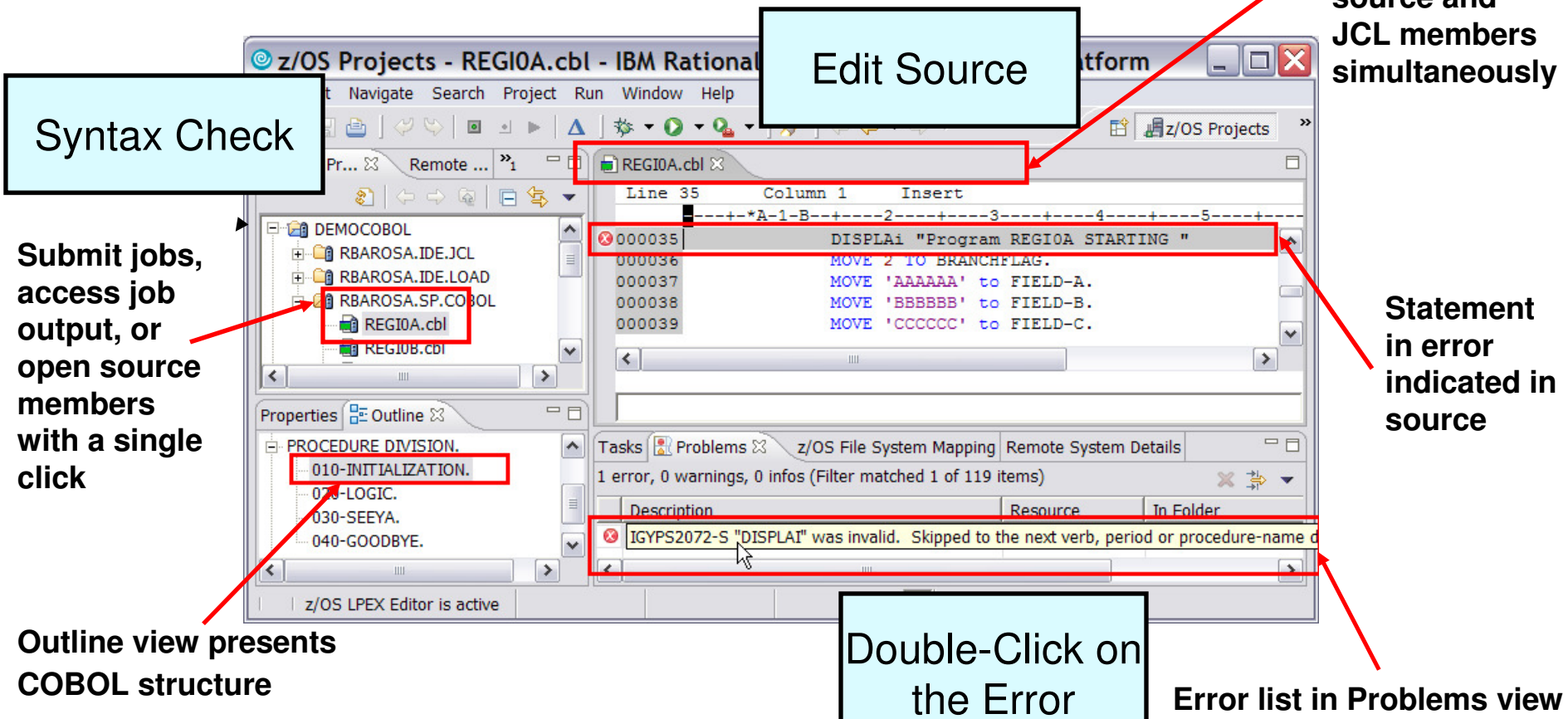


- Limited screen content requires multiple screen switching
- Lack of productivity aids requires more developer effort

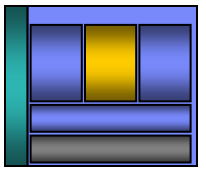


RDz Eclipse-based development

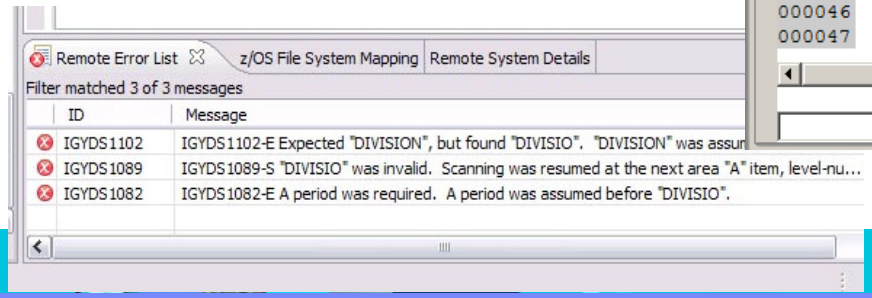
- More information readily available to the developer
- Productivity aids simplify and eliminate developer tasks
- Local syntax checking eliminates host compile MIPS

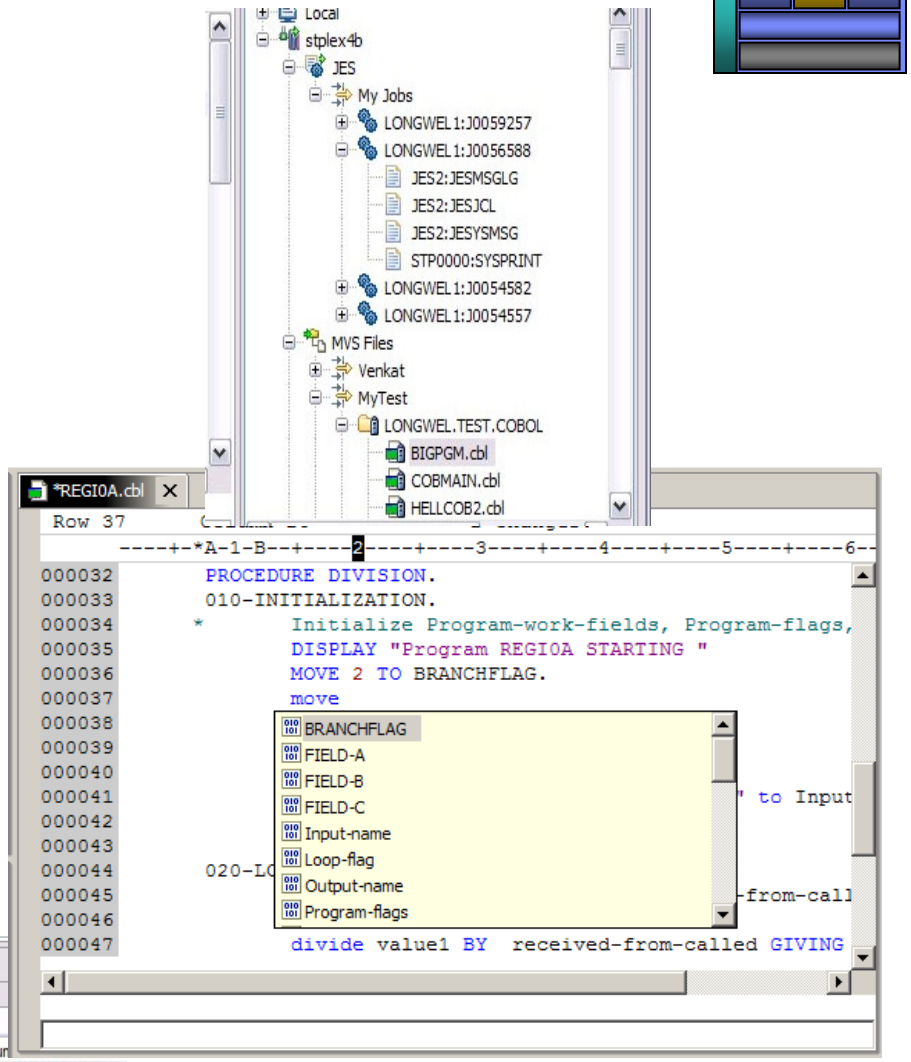


Save time and money with operation offload

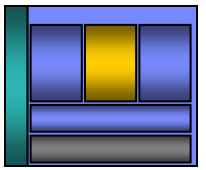


- Access multiple LPARs and runtimes concurrently
- Work with zOS assets like you work with windows files
- Use advanced editing technology to:
  - Easily work with multiple members
  - Use code insight to automatically understand and create code
  - Quickly create programs from code templates, pattern definitions, or UML
  - Ensure compliant COBOL syntax with feedback as you type
  - Save MIPS and time by running code validation and editing cycles on the workstation

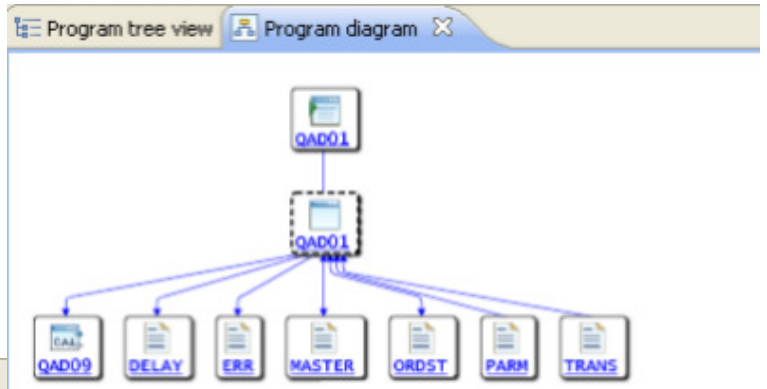


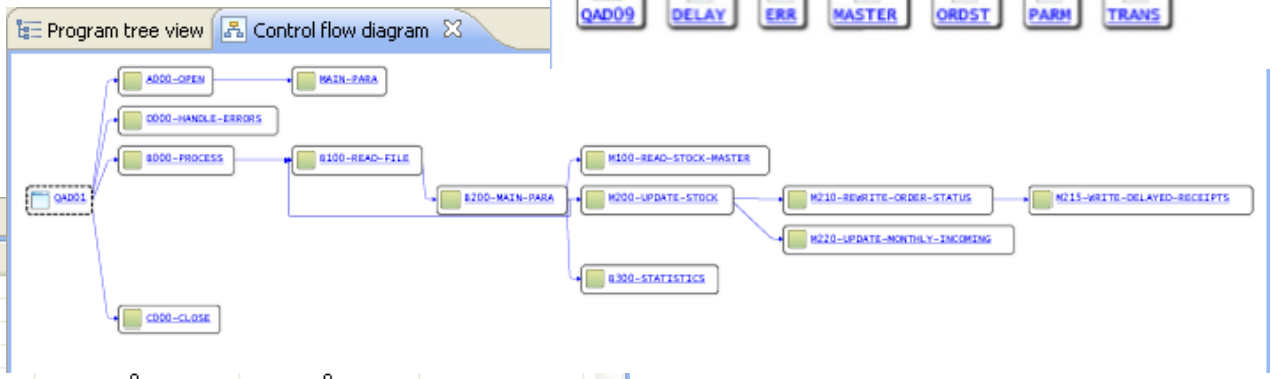


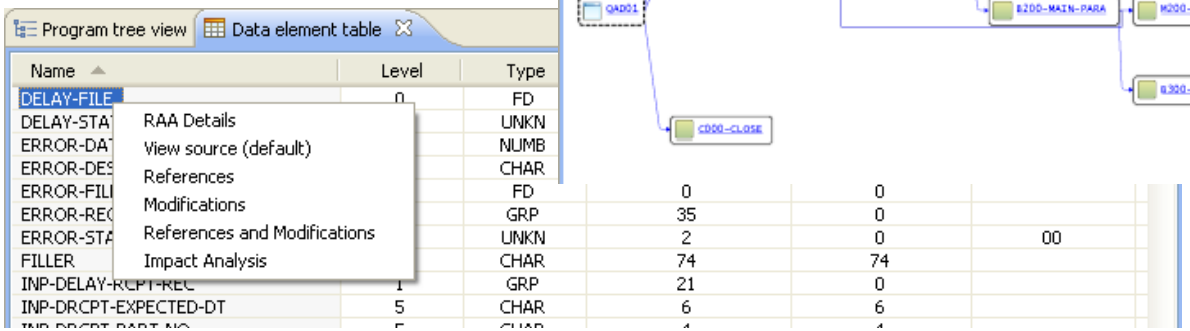
Bridging Development and Analysis in the IDE



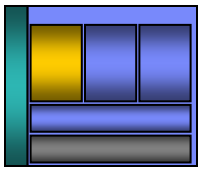
- Bring application analysis information into the IDE to aid in program development and understanding
  - Link code to data and runtime resources
  - Visualize code structure and flow
- Understand the effect of changes made in the IDE when deployed into production
  - Run impact analysis on code changes to determine effected production modules
  - Size testing efforts and create workspaces for changes





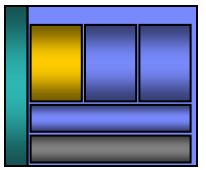


Save time with integrated tools …



- Take advantage of the Eclipse environment to gain access to a wider variety of data and functionality
- Create or install third-party Eclipse plug-ins to extend and specialize the development experience
- Work with the IBM Problem Determination tools from the RDz environment
  - Debug Tool
  - File Manager
  - Fault Analyzer

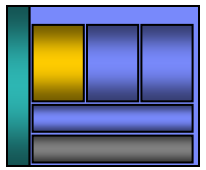
Tooling integration using the Eclipse IDE



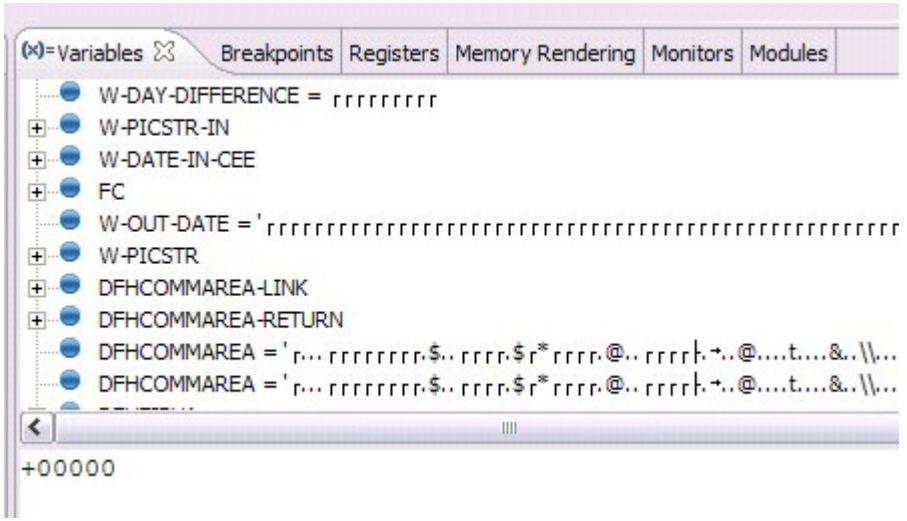
- Increased productivity and higher code quality using:
  - WebSphere Test Environment
  - Web Services Explorer
  - Data Explorer

- Extend and specialize the development experience for additional productivity, code quality, and risk reduction with:
  - Rational Asset Analyzer
  - CICS Interdependency Analyzer, Performance Analyzer, Configuration Manager
  - ClearCase, ClearQuest and Build Forge
  - IBM Problem Determination Tool Suite for z/OS

Debug Multiple Runtimes

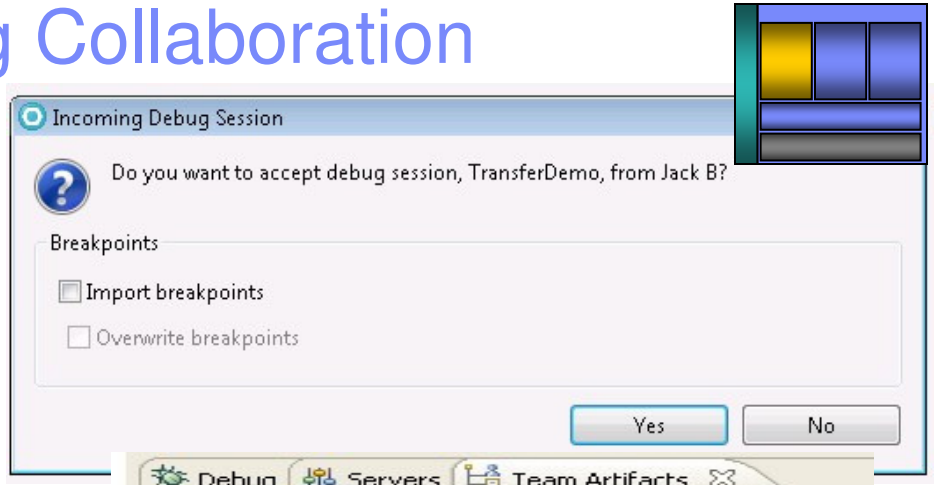


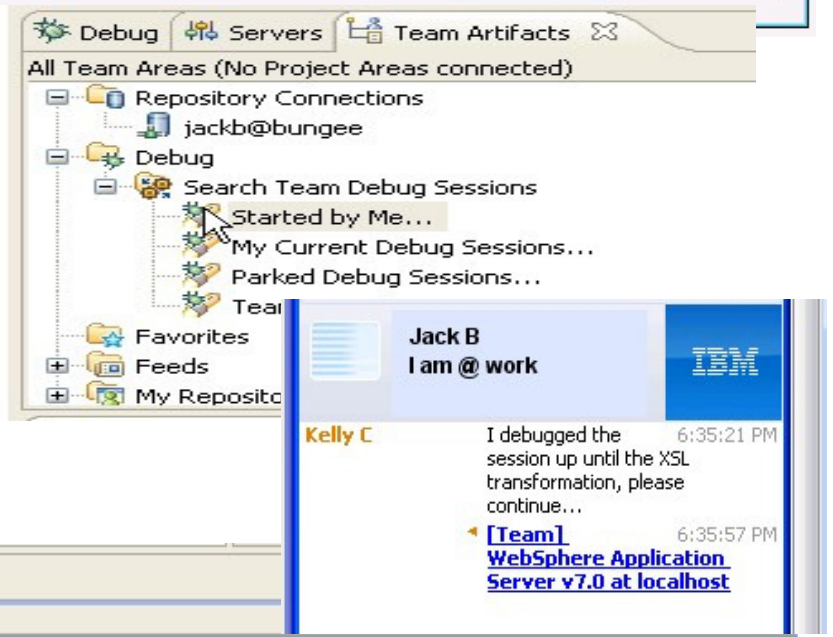
- Use the cross-platform debugger to debug end-to-end systems as they execute in the runtime
  - CICS
  - IMS
  - DB2
  - Batch
  - WAS
  - Native LUW
- From the workstation:
  - View executing source code
  - Step through host code line-by-line
  - Set breakpoints
  - Alter working storage values
  - Alter register values
  - Etc…
- Debug zOS and distributed code in the same interface even stepping between runtimes and platforms!
- Requires on IBM Debug Tool

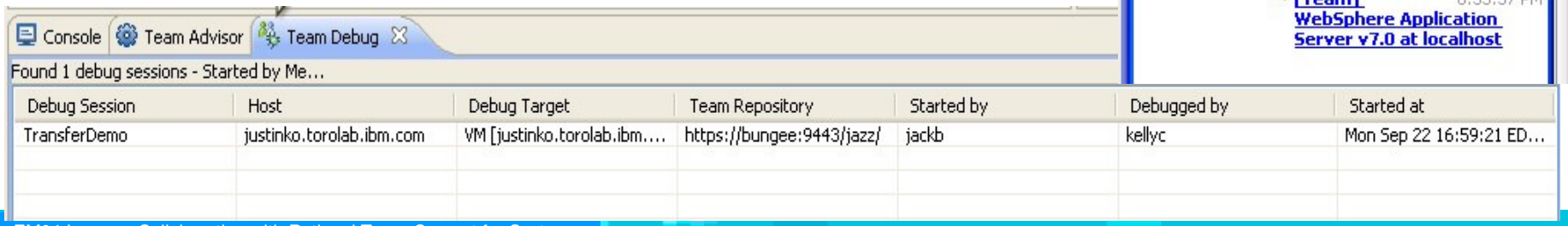


Innovative Debugging using Collaboration

- Collaborative debug with RDz and IBM Debug Tool via the Rational Team Concert Server!
  - Share breakpoints and monitors with other team members
  - Transfer debug session control to other users
  - Save debugging sessions for later retrieval in the team environment
  - Works for WAS (JEE) and System z applications

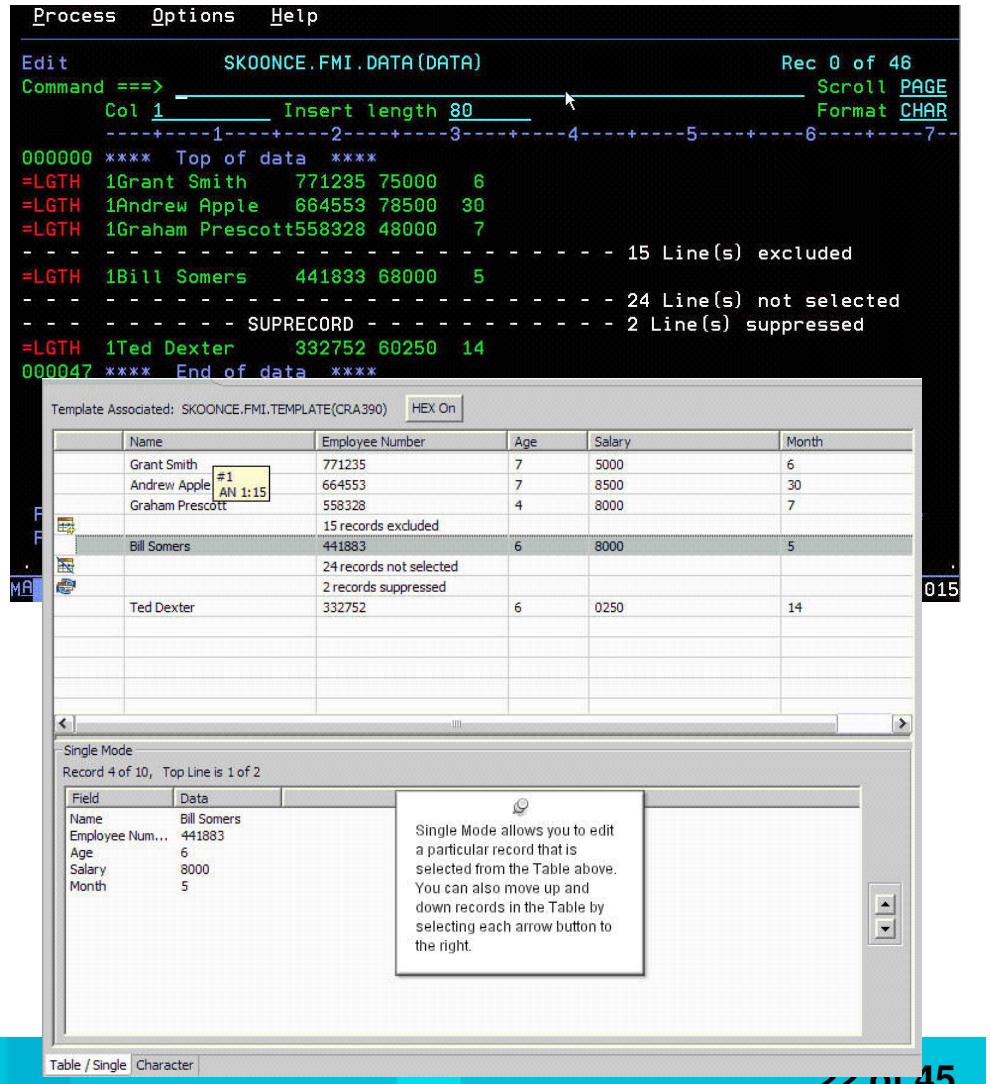






Access host-resident data

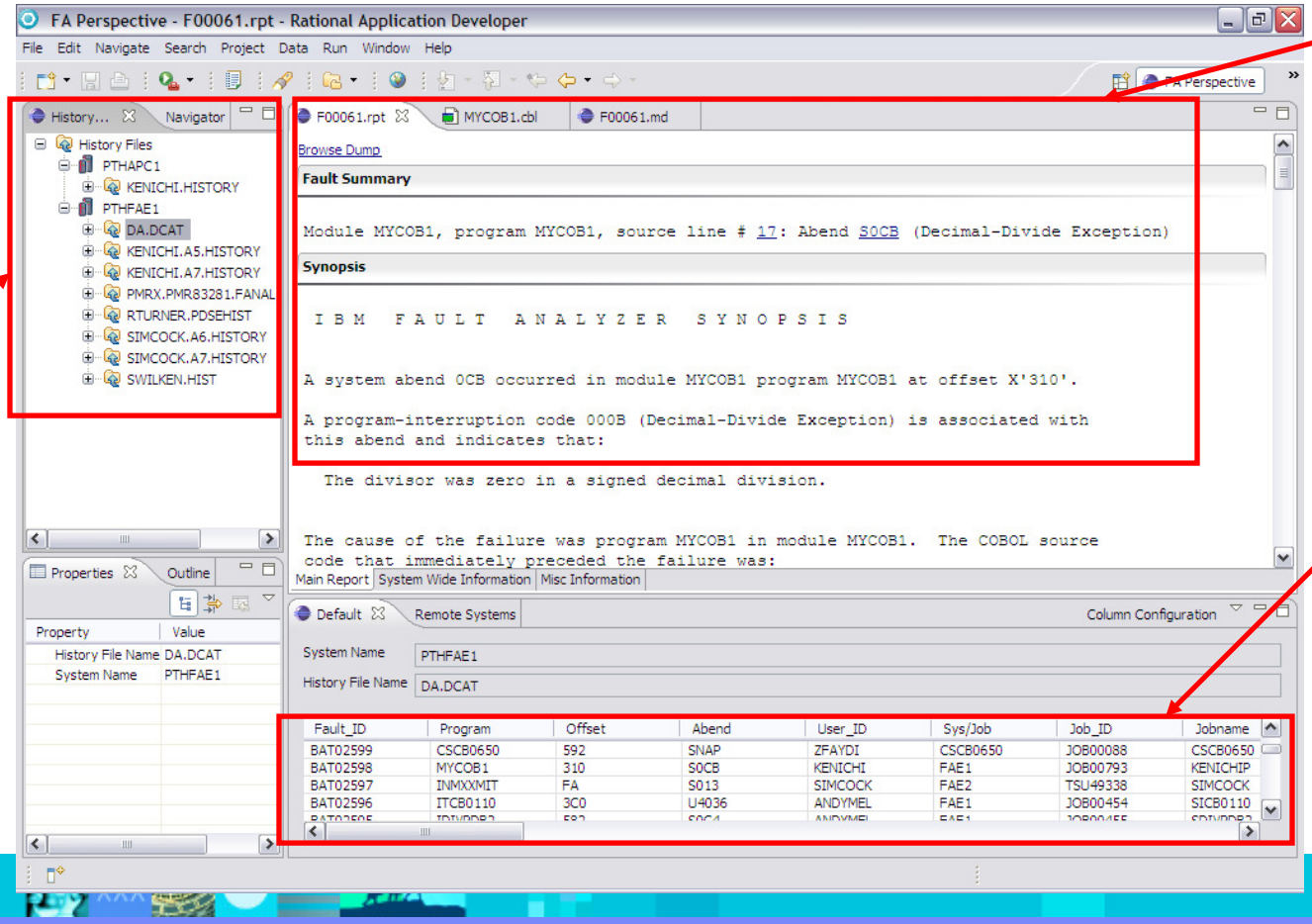
- Allows for a formatted edit session of many dataset types. Among the options are:
  - VSAM - KSDS, ESDS, RRDS, VRRDS
  - QSAM – PDS, SDS
- Multiple views of the data within the formatted edit session:
  - Table
  - Single Character
- Browse and alter VSAM data easily without having to leave your development environment
- Apply different views of data using copybooks as a template
- Issue utility commands for copying, sub-setting, and searching data from right-click menus
- Requires on IBM File Manager



Analyse production problems

- Provides an interface to browse a real-time ABEND analysis reports
- Supported environments: COBOL, PL/I, Assembler, C/C++, Java, CICS, MQ, IMS and DB2.
- COBOL working storage display using mini-dump and sidefiles.
- Requires on IBM Fault Analyzer for z/OS.

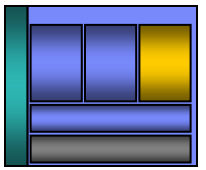
Analysis report containing probable cause, source listing, and dump information



List of history files

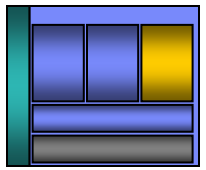
History file summaries

Reuse existing business logic to speed development

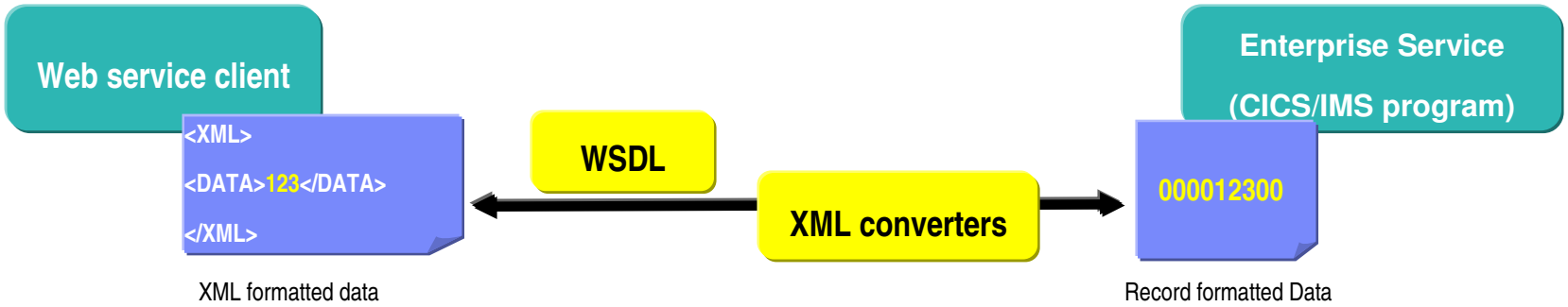


- Web 2.0 interfaces offer a rich experience on top of existing zOS applications, data, and logic
- Web services provide standardized access to assets for different software applications residing on disparate platforms
- Web service definitions provide abstract interfaces which allow for loose coupling between business components – implementation can vary without affecting consumers
- You can reuse applications exposed as Web services in a variety of service-oriented architecture frameworks, such as a process choreographer or an enterprise service bus.

RDz improves Web services development

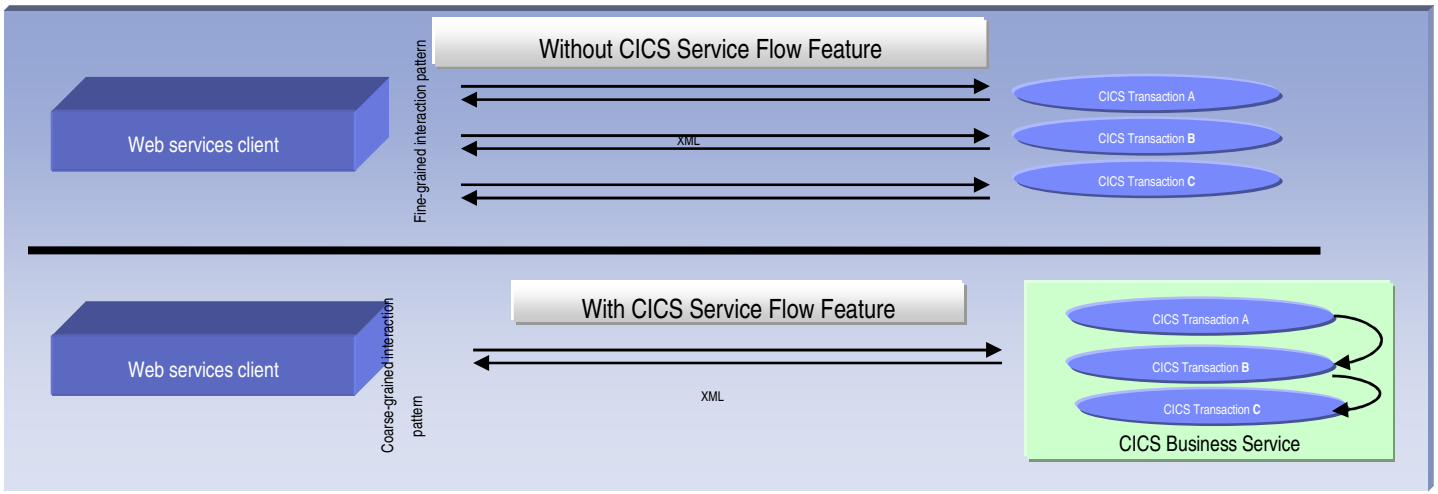


- Generates XML conversion programs, WSDL, other deployment artifacts
  - Reduces developer training costs
  - Increases developer productivity
  - Produces higher quality applications
  - Reduces risk of project delays
  - Maximizes reuse of existing z/OS applications



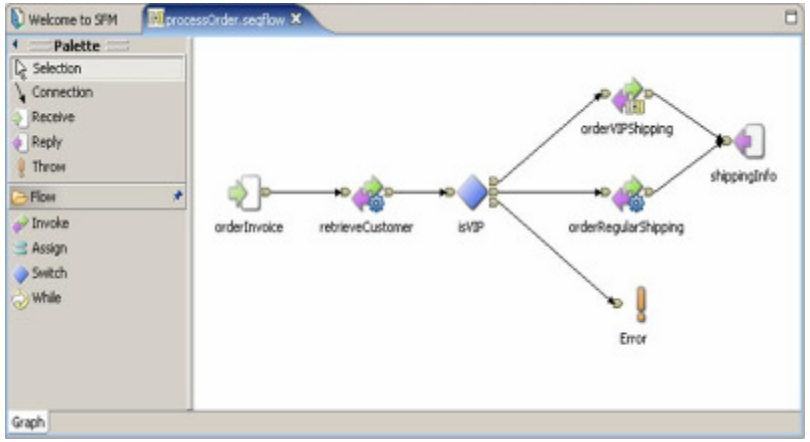
RDz Code Generation options	WSDL (SOA Message definition)	XML Converter (Conversion program)	CICS/IMS program
Start with existing z/OS program	**RDz Generated**	**RDz Generated**	Input
Start with program and client WSDL	Input	**RDz Generated**	Input
Start with client WSDL	Input	**RDz Generated**	**RDz Generated**

RDz improves CICS Business Services developm

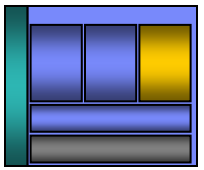


RDz generates

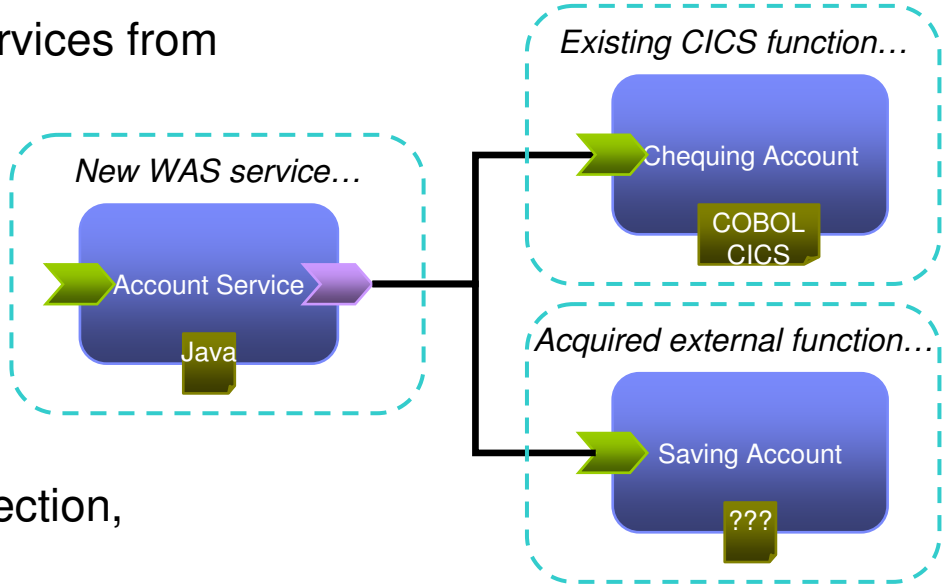
- Optimize application investment with CICS Service Flow Feature
  - Aggregate multiple CICS transactions into reusable CICS Business Services
- Reduced network cost and development risk by using CICS business service
- Increased productivity using RDz's Service Flow Modeler to develop CICS business service



Service Component Architecture (SCA) helps with cross-platform application assembly



- Open, multi-vendor endorsed standard (soon) designed for SOA
- Extends, exploits and complements existing standards
- Unifying framework for assembling services from disparate assets
- Loose or tight coupling of coarse or fine grained services
- Diverse implementations, bindings and data representations
- Recursive “composite” definition
- Inversion of Control – dependency injection, annotations, reflection
- Asynchronous, conversational programming model
- Declarative Policy
- Deployment and packaging model similar to OSGi



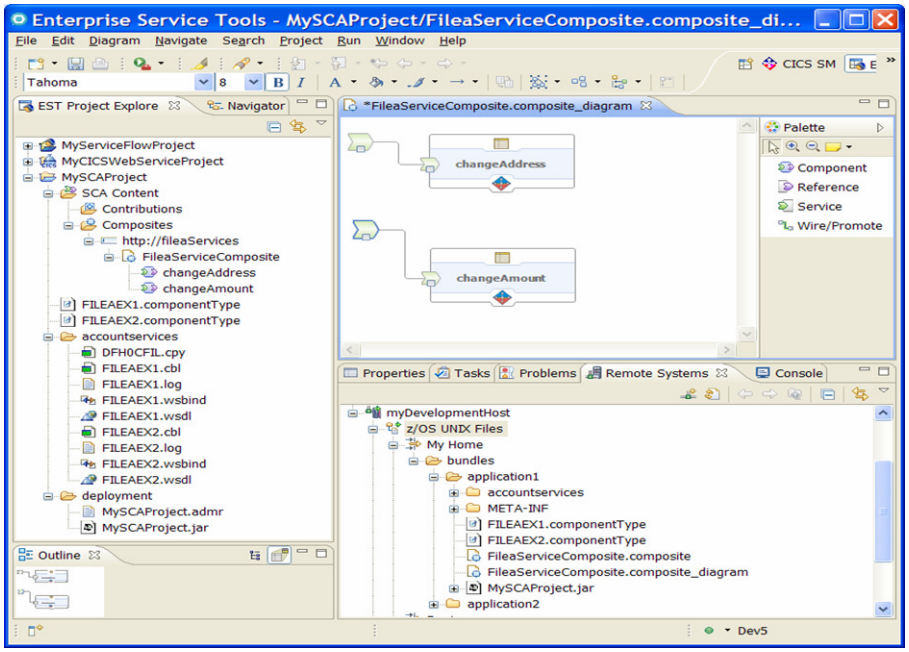
RDz SCA tooling – Modeling and deploying services

- Define application component interfaces and dependencies
  - input/output
  - CICS/WAS resource requirements

- Visualize application structure and dependencies between components and services

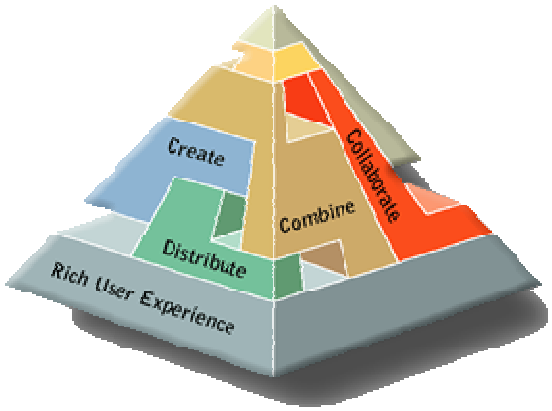
- Easily deploy component definitions to CICS and WAS
  - Right-click and deploy for testing

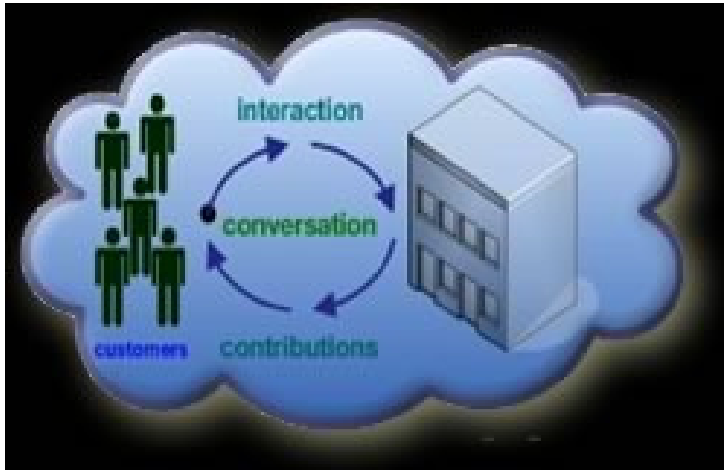
- Manage components through the lifecycle



Easily create situational applications with low skill

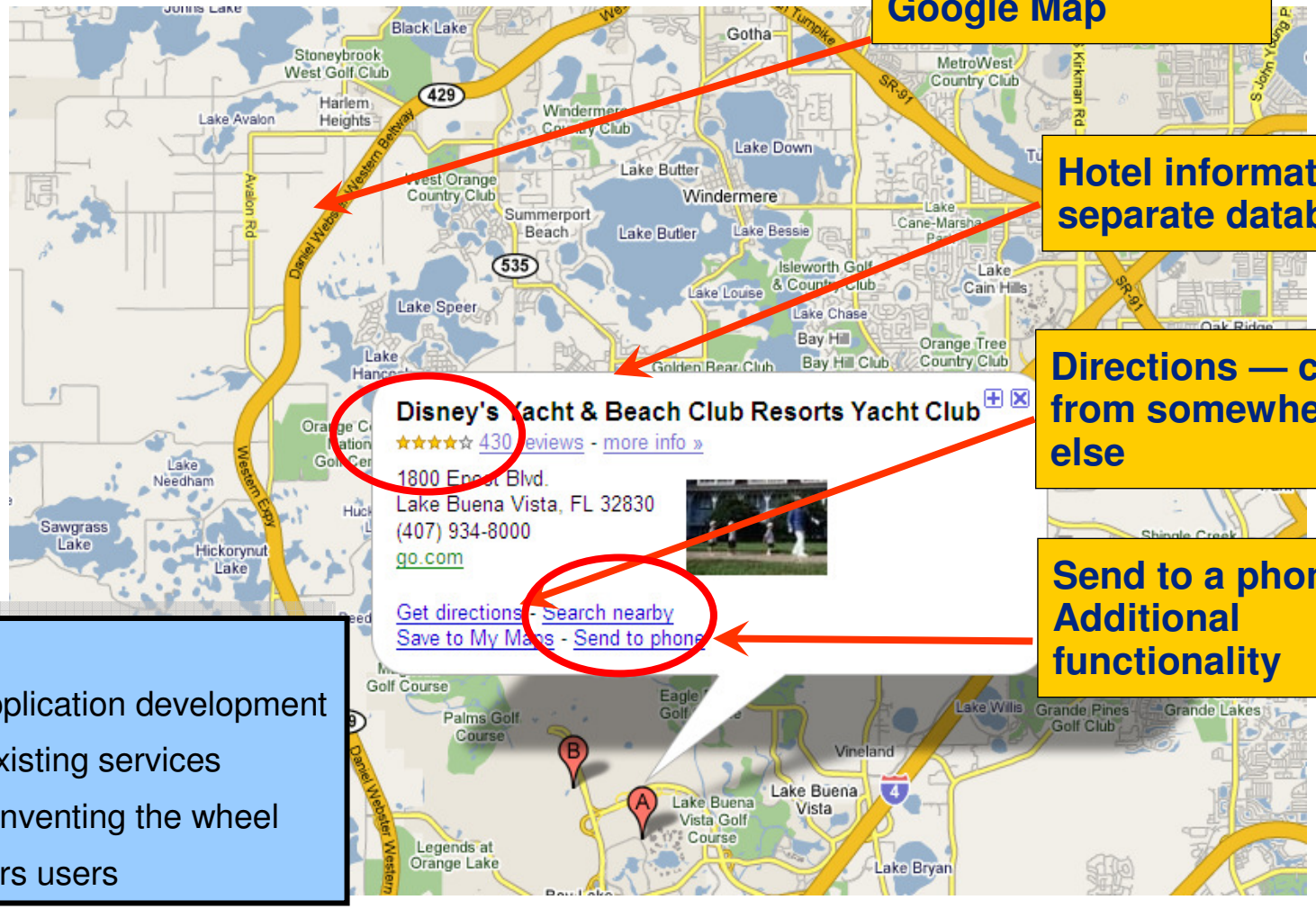
- Enable subject matter experts to build loosely-coupled composite applications via reuse and “mash-ups” quickly
- Allow disjoint data to be quickly combined in different ways to make an immediate business impact





Mashups

Combine content from more than one source into an integrated experience



Why?

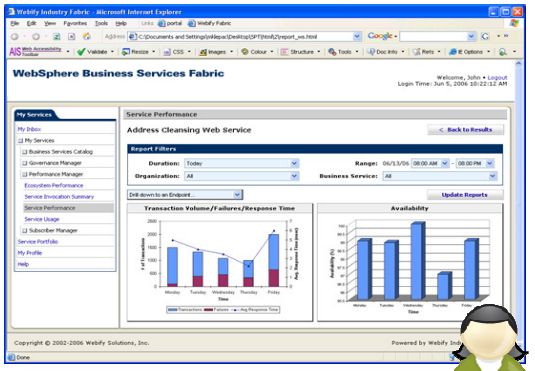
- Rapid application development
- Reuse existing services
- Avoid reinventing the wheel
- Empowers users

Transform Insight into Action with CICS Events and WBE

CICS Application Algorithms

CICS TS Version 4.1

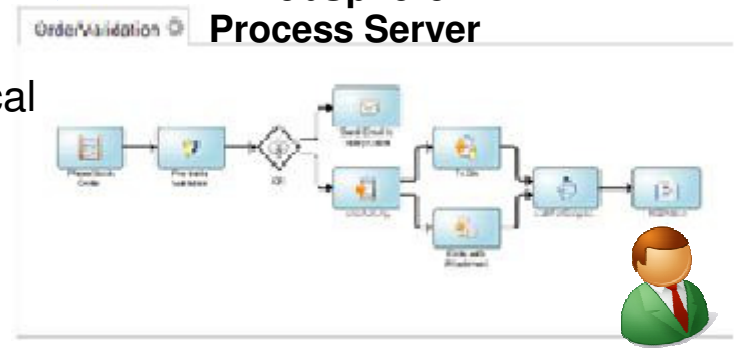
WebSphere Business Events



WebSphere Business Monitor

Business Leader

WebSphere Process Server



Business Professional

Key Business information can be externalized from critical Applications as execution occurs to

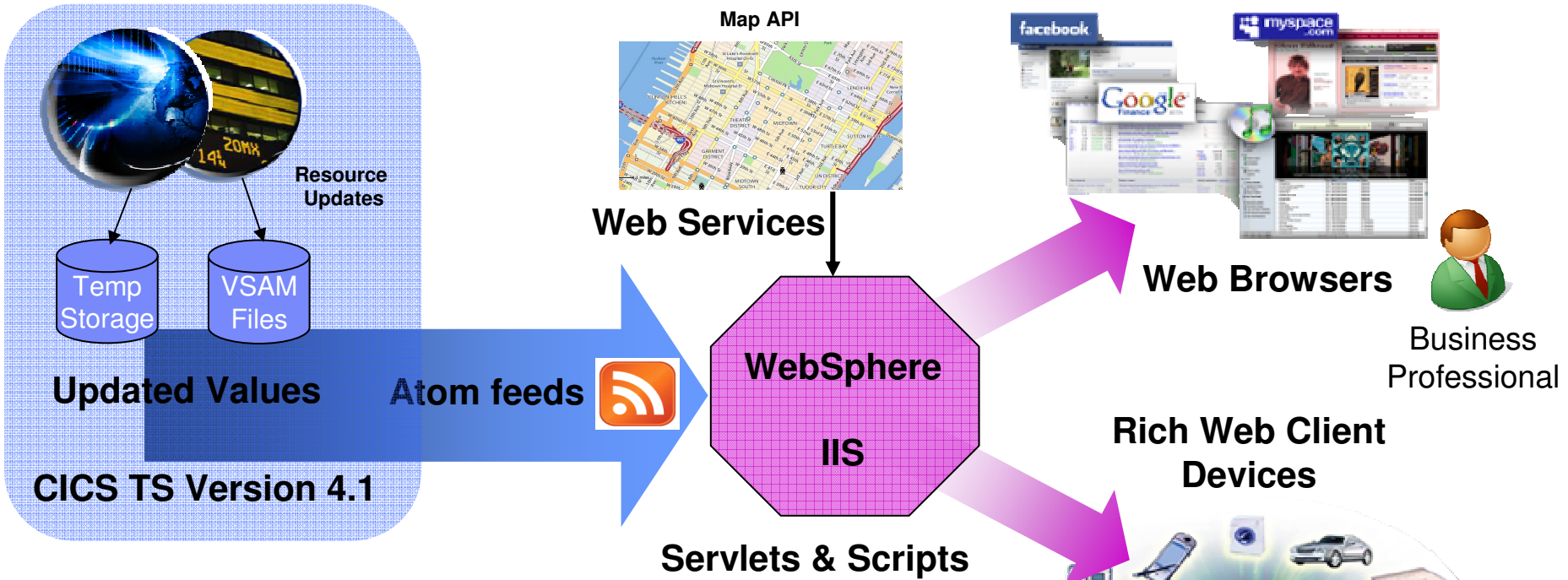
- Immediately update business views
- Trigger other business behaviours

NO APPLICATION CHANGE REQUIRED

CICS and Business Events

- Event processing addresses the need for agility
  - Modern businesses must react quickly to circumstances
  - Make decisions based on timely information and insight
- CICS systems run an enormous amount of existing business logic
- Using an Event-based approach, there is potential to gain insight into the processing in CICS and to introduce additional extensions to applications
  - In a dynamic, de-coupled fashion
  - **Without the need to change the applications**
- CICS TS V4.1 supports emission of business events from existing applications, helping businesses to
  - **Comply** with shifting corporate, industry and government policies
  - **Compete** by responding flexibly to business opportunities
  - **Drive a range of event consumers**
    - WebSphere Business Monitor, WebSphere Business Events, CICS application, application through MQSeries, …

CICS Web 2.0 ATOM Feed

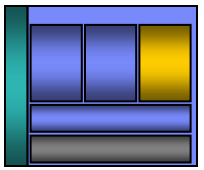


Current CICS resource business values can be accessed as a standard web resources

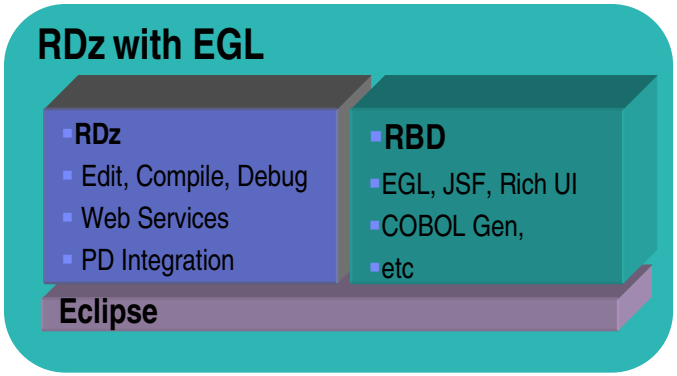
- Rapidly included as a standard information source
- Naturally integrated with other live data sources
- Available in standard web developer tool kits

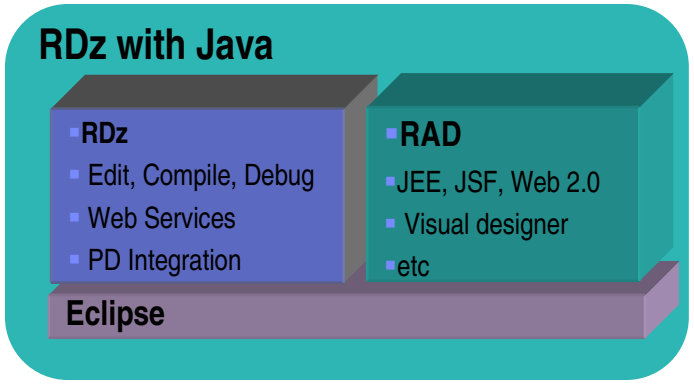
NO APPLICATION CHANGE REQUIRED

RDz improves Web 2.0 development



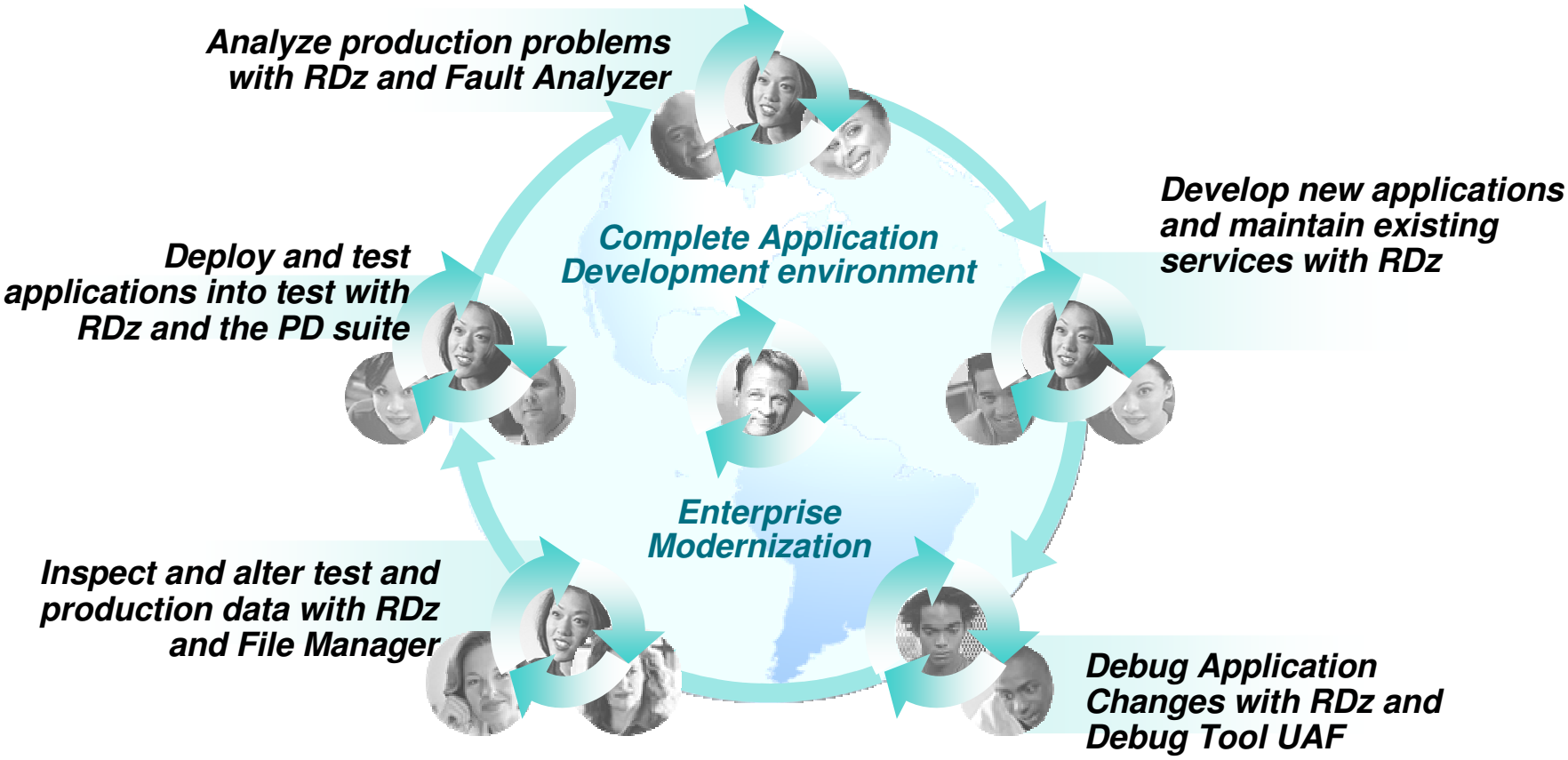
- Simplify delivery of modern user interfaces such as JSF and Rich UI (Web 2.0) on top of System z applications
  - Visual programming speeds design and coding, fewer errors
  - Generate code from UML models to speed application development
  - Common IDE shared between Java and z/OS developers
- Reduce training costs by leveraging RDz with EGL
  - Current Business-based developers use existing skills
    - No Java coding required; yet deploys as Java





Complete development environment with CICS, RDz, and PD Tools

View your ABENDS, debugging information, source code, and backend data side-by side in the same workstation development environment



Next Steps: How to get started?

Resources to help kick-start your Enterprise software innovation

System z Sandboxes

Example assets and best practices providing low-risk, practical, hands-on path to leveraging IBM solutions

- Full version software trials
- 'Try online' hosted System z environments
- Hands-on-exercises

System z Starter Solutions

Solution to help you incrementally evolve core IT systems towards modern architectures and technologies

- Discover, reuse and grow
- Analyze and modernize
- Develop and manage
- Test and track

Jump-start your modernization projects!

Education Series

Modern Application Architecture for COBOL Developers

Learn how to design and integrate composite applications across CICS and WebSphere – leveraging existing COBOL processes

EGL Distance Learning

8 days of training free electronically - lectures, labs, and electronic support

Learn more at:
www.ibm.com/rational/modernization

http://w3-103.ibm.com/software/xl/portal/viewcontent?type=doc&srcID=R9&docID=X983555G31195K78

QUESTIONS


Thank
You

Challenge: *Decrease application development & maintenance costs*

"How can I control my budget while maintaining and enhancing existing mainframe applications ?"

"How can I control costly re-development of my applications and reduce the number of defects?"

"How can I improve application design, quality and performance?"

"How do we work with applications that are more complex than ever, despite the difficulty in finding skilled resources?"

"Many of my experienced mainframe developers are leaving, and I don't know how to find new developers to replace them."

"I can't be sure how changes in one part of an application will affect other parts. Maintenance is not just difficult, it's dangerous."

"How do I modernize my legacy applications for new Web based or SOA applications without an integration nightmare?

Additional RDz and RBD Resources

- Get this complimentary kit for mainframe developers for a practical, how-to guide for making the most of an existing development environment, including the skills and infrastructure already in place at an established enterprise.
  - Did you say mainframe? e-kit
    http://www.ibm.com/developerworks/integrate/kits/mainframe/
    - This kit contains the following:
      - Podcast series: Did you say mainframe?
      - Webcasts
      - Tutorials
      - White and red papers
      - Demos
      - developerWorks articles and other resources
- Find more Enterprise Modernization System z resources
  - http://www.ibm.com/software/info/developer/solutions/em/systems/z/
- You can also find out more about other IBM Enterprise Modernization offerings at this site
  - http://www.ibm.com/software/info/developer/solutions/em/

Additional PD Tools resources

- Website: PD Tools external family page: link
- Webcast: PD Tools for SOA Environments: link
- Trial: Explore Problem Determination Tools within RDz: link
- Redbook: IBM Application Development and Problem Determination Tools V9: link